The Dissertation Committee for Viorica Alexandra Teodorescu

certifies that this is the approved version of the following dissertation:

Modification in the Noun Phrase: The Syntax, Semantics, and Pragmatics of Adjectives and Superlatives

Committee:

David Beaver, Supervisor

John Beavers

Hans Kamp

Richard Meier

Stephen Wechsler

Modification in the Noun Phrase: The Syntax, Semantics, and Pragmatics of Adjectives and Superlatives

by

Viorica Alexandra Teodorescu, B.A.; M.A.

Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

August 2009

Acknowledgments

Most of all I would like to thank my advisor, David Beaver, who guided me with wisdom and patience through the challenges of dissertation writing. I met David when he came to Austin to give a talk at the Texas Linguistic Symposium in 2004 and enjoyed our conversation so much that the following year I jumped at the opportunity to take his course at the LSA Summer Institute. Little did I know at the time that he would soon take a position at UT and become my advisor. His enthusiasm, insight, and vision have inspired me every step of the way and helped me grow as a researcher. He was able to see through my often foggy ideas the core of something valuable and help me get to that. My appointments with him have been a great joy and a continuous source of fresh ideas and renewed energy. His trust and support gave me the strength to carry on even when I doubted myself, and he was willing to help at a moment's notice. This dissertation has benefited immensely from his advice, as have I personally. There is so much I learned from him that goes beyond academia. David has been everything one could ask of an advisor.

I was very fortunate to have a great committee, whose thoughtful questions, suggestions, and stimulating discussion have significantly contributed to this dissertation. John Beavers was always happy to discuss things, challenging my assumptions and helping me sharpen my arguments. Richard Meier has been incred-

ibly supportive throughout my years in the program, for which I am very grateful. Stephen Wechsler has been very encouraging of me and my research. From his courses I learned how to approach core aspects of syntax from different perspectives, as well as the value of cross-linguistic work. Hans Kamp has joined the committee more recently, but his insightful comments have had an immediate impact on the dissertation and I very much enjoyed our discussions; they were a real treat!

I am also very grateful to Bernhard Schwarz who, while at UT, introduced me to semantics and under whose supervision I worked on many topics. It was during one of his seminars that I got interested in superlatives. The chapter on adjective ordering in this dissertation owes much to the discussions we had when I was a visiting student at McGill. I am deeply indebted to him for his guidance and support over the years. I would also like to acknowledge Bernhard's contribution in making my visit to McGill possible and to thank him and Junko Shimoyama for hosting me during my first days in Montreal.

Although far away from my home in Austin my visit at McGill was a great experience in no small part due to the people I met. Lisa Travis was generous with her time and we had many wonderful appointments. I have also benefited from interactions with other faculty there: Junko Shimoyama, Yosef Grodzinsky, Andrea Gualmini, Jon Nissenbaum, Glyne Piggott, Lydia White, and Dana Isac from Concordia University. Lydia also offered her advice and helped me sort out my housing woes. I had much fun in the company of good friends: Diana Popescu, Monica Ungureanu, Heather Newell, Andrea Santi, Meredith Landman, Eva Dobler, Tobin Skinner, Josh Horner, Naoko Tomioka, and Joey Sabbagh. My aunt Liliana Diesel spoiled me with food and affection. While in Canada, I also got the chance to reconnect with Virgina Hill, with whom I enjoyed many conversations on Romanian

linguistics and otherwise. I am grateful for the financial support she provided me through a research grant.

In addition to my committee, my graduate career was influenced by several other people that were or still are in the UT Linguistics Department. Rajesh Bhatt was the first person I ran into when I first wandered through Calhoun Hall and later became my Master's thesis co-supervisor, together with Bernhard Schwarz. I benefited greatly from Rajesh's generosity with his time and ideas. His advice shaped my way of thinking about linguistics. Lisa Green offered her guidance when I most needed it and helped me figure out the intricacies of writing a successful fellowship statement. She also got me started on my explorations of the morpho-syntax of the Romanian verbal domain. For a brief semester, the late Carlota Smith was my co-supervisor. I cherish our few meetings and will always remember her warmth, grace, and the thirst for life that kept her involved in the Department until the end. Bjorn Lindblom, Megan Crowhurst, and Harvey Sussman taught me everything I know about the world of sounds. Harvey is a fantastic teacher and I learned a lot from him as his teaching assistant for several semesters.

I owe a debt of gratitude to my professors from Romania. I discovered the world of linguistics through Gabriela Alboiu. Her advice, support, and friendship have been invaluable. Alexandra Cornilescu is a true Renaissance scholar and it is thanks to her that I became a linguist. Many a time her house became a second classroom where she nurtured generations of Romanian linguists. I feel privileged to have experienced that.

One of the best things about grad school is the friends you make. I was very lucky to have shared the ups and downs of writing a dissertation with so many wonderful friends: Lynda deJong Boudreault, Alexis Palmer, Fred Hoyt, Jess White, Malavika Shetty, Ginger Pizer, Cynthia Anderson, Laura Mahalingappa,

Brian Reese, Cheng-Fu Chen, Liberty Lidz, and Elaine Chun. Because of them, the good times were so much better while the bad ones were easily forgotten. But it was not all fun and games - every once in a while we also did some research. I had a fun and productive collaboration with Fred Hoyt on sluicing, which resulted in a conference presentation as well as my first published paper. Brian Reese was always willing to discuss semantics with me, be it during the day or at a happy hour at Dog & Duck. Ginger, Laura, Liberty, and Elaine have given me much needed advice when I was preparing job applications. Thanks also to friends from near or far with whom I have crossed paths in my graduate years and have shared in linguistic explorations: Oana Ciucivara-Săvescu, Adrian Braşoveanu, Simona Herdan, Octavian Popescu, Boban Arsenijevic, Hedde Zeijlstra, Eytan Zweig, Tom Leu, Lisa Levinson, Jonathan Brennan, Erika Troseth, Rachel Szekely, David Schueler. I hope I did not inadvertantly leave anyone out.

Special thanks to the staff of the UT Linguistics Department: Leslie Crooks, the late Kathy Ross, Ben Rapstine, and Gina Pollard for all their help over the years in making my interaction with UT seamless.

I would like to acknowledge the financial support received from the University of Texas at Austin in the form of three fellowships: University Preemptive Fellowship, David Bruton Jr. Graduate Fellowship, and University Continuing Fellowship. Thanks also to David Beaver for a summer support.

Last but not least, I would like to thank my family for their unconditional love. To Mom and Dad who never stopped believing in me. To my sister, Anca, who has been my best and dearest friend. To my husband, Dan Tecuci, for making me laugh and bringing sun into my life. This dissertation is dedicated to them.

VIORICA ALEXANDRA TEODORESCU

The University of Texas at Austin

August 2009

Modification in the Noun Phrase: The Syntax, Semantics, and Pragmatics of Adjectives and Superlatives

Publication No. _____

Viorica Alexandra Teodorescu, Ph.D.
The University of Texas at Austin, 2009

Supervisor: David Beaver

The grammar of modification is highly complex and raises numerous questions about the relation between meaning and form. This dissertation provides a study of how modified noun phrases are interpreted and examines the consequences of these results for the syntax of the nominal domain. The discussion centers on two types of modification: superlatives and stacked modification. The data comes primarily from English, but other languages are also discussed. There is initial

evidence that the main claims hold across a wide range of languages.

The common view on superlatives is that they have two types of interpretations which are the result of a scope ambiguity and that the contrast between them needs to be captured by means of syntactic devices. Contra this standard approach I propose a saliency theory of superlatives which claims that there is no categorial difference between these two interpretations and where the variation in the meaning of superlatives is purely pragmatic in nature. Under this view the meaning of superlatives is a function of the properties of the surrounding discourse and the context-sensitivity of superlatives is subsumed to the more general phenomenon of context-dependency in the interpretation of natural language quantifiers. The saliency theory differs from other analyses that have adopted a discourse approach in that the so-called comparative reading does not depend on the presence or interpretation of focus.

Previous approaches to multiple adjectives analyzed their order in terms of the semantics of individual adjectives. I present a new set of data which shows that this is insufficient and propose an explanation that takes into account the meaning of the whole nominal phrase. This result has consequences for how the architecture of grammar should be conceived. In particular, it shows that principles of syntactic well-formedness can sometimes be sensitive to compositional semantic interpretation, as well as pragmatic information. This is in contradiction to many contemporary approaches to grammar where the semantic component has no influence on the syntactic one.

Contents

Chapter 1

Introduction

The grammar of modification is highly complex and raises numerous questions about the relation between meaning and form. This dissertation provides a study of how modified noun phrases are interpreted and examines the consequences of these results for the syntax of the nominal domain. The discussion centers on two types of modification: superlatives and stacked modification. To illustrate some of the issues that I will be addressing let us consider the following two examples from the July 18, 2009 issue of the New York Times.

(1) a. He grew accustomed to being one of the last ones standing. Last year, he joined Harry Patch, Britain's last soldier, and the late Bill Stone, its last sailor, in a ceremony at the Cenotaph war memorial near the houses of Parliament in London, to mark the 90th anniversary of the war's end.[1]

[1] http://www.nytimes.com/aponline/2009/07/18/world/AP-EU-Britain-Obit-Oldest-Man.html?_r=1&hp

b. Every Kennedy documentary includes the clips of Mr. Cronkite announcing that the president had been shot and removing his thick black glasses for a pause after stating that Kennedy was dead.[2]

In (1a) we have a restricted interpretation for the superlative noun phrases *Britain's last soldier* and *its last sailor*; both have a reading that is relativized to World War I veterans. Harry Patch wasn't really Britain's last soldier. Example (1b) illustrates a different aspect of modification, which (superficially at least) has more to do with form than interpretation. The noun *glasses* is modified by two adjectives at the same time and the fact that *thick* precedes *black* does not seem to be an accident. A google search shows that this is the preferred word order, as it gets 16 times the number of hits compared to the reverse order.[3] Starting from examples such as these I will address the following questions:

1. How are superlatives interpreted? To what extent is the intepretation of superlatives dependent on context?

2. Are all adjectives rigidly ordered? If not, how do adjectives with flexible word order differ from those with rigid word order? Is there a uniform analysis that can account for all such cases?

The common view on superlatives is that they have two types of interpretations which are the result of a scope ambiguity and that the contrast between them

[2]http://www.nytimes.com/2009/07/18/arts/television/18appraisal.html?_r=1&scp=3&sq=long%20thick&st=cse

[3]The actual numbers are: 564,000 hits for "thick black glasses" and 33,500 for "black thick glasses".

needs to be captured, at least in part, by means of syntactic devices. This is the approach previously taken by Szabolcsi 1986; Heim 1985, 1999; Farkas and Kiss 2000. *Contra* these standard approaches I propose a saliency theory of superlatives which claims that there is no semantic difference between these two interpretations and where the variation in the meaning of superlatives is purely pragmatic in nature. Under this view the meaning of superlatives is a function of the properties of the surrounding discourse and the context-sensitivity of superlatives is subsumed to the more general phenomenon of context-dependency in the interpretation of natural language quantifiers. One important difference concerns the interpretation of the so-called *comparative reading* illustrated in (2b).

(2) John climbed the highest mountain.

a. *Absolute reading*:

John climbed a mountain higher than all other mountains.

b. *Comparative reading*:

John climbed a mountain higher than (the mountains) everyone else climbed.

The three existing approaches to superlatives derive the comparative reading by using one of the following mechanisms: (i) covert movement (Szabolcsi 1986; Heim 1985, 1999), (ii) special indices connecting the interpretation of multiple constituents (Farkas and Kiss 2000), or (iii) grammatical association with focus (Sharvit and Stateva 2002, Gutierrez-Rexach 2006). The saliency theory differs from them in that the comparative reading is not a scope ambiguity and hence there is no need to resort to covert movement operations or special indices. It is also ar-

gued that the comparative reading does not depend on the presence or interpretation of focus. I provide a wide range of examples showing that the saliency theory can account for all the readings that previous analyses derive and that, in addition, it can also capture readings that these analyses cannot generate. For example, I argue that amount superlative DPs (e.g. *reading the most books*), which typically lack absolute readings (Szabolcsi 1986, Farkas and Kiss 2000, Gawron 1995, Schwarz 2004b, Teodorescu 2007, Hackl 2009), provide further evidence for the saliency theory, using evidence from both English and Romanian.

The account of superlatives is developed in chapter 2, along with a presentation of standard accounts in the literature. I also argue that the saliency theory is to be preferred on methodological grounds. In chapter 3 I present data which I argue shows that the account developed here is to be preferred on empirical grounds as well.

In chapter 4 we consider the issue of adjective orderings. Previous approaches to multiple adjectives analyzed their order in terms of the semantics of individual adjectives (e.g. Quirk et al. 1972, Dixon 1982, Sproat and Shih 1991, Cinque 1994, among many others) and argued for a set of universal linearization constraints. I propose to examine this puzzle from a novel perspective, namely focusing on cases where adjective ordering restrictions do not apply. The range of attested exceptions falls into two types of categories: adjectives with special intonation, such as the English adjectives in (3), which are pronounced with "comma intonation" or "focus intonation", and adjectives that correspond to reduced relative clauses, like those in the Romance and Chinese examples in (4). None of the

orderings below are expected according to the linearization constraints.

(3) a. the red, large chair (Martin 1970)

b. BLACK small cat (Cinque 2005b)

(4) a. un fruit orange enorme
a fruit orange huge
'a huge orange fruit' (Cinque 1994)

b. yuan-de hao-de panzi
round-DE *good*-DE *plate*
'round nice plate' (Sproat and Shih 1991)

I discuss new classes of exceptions: operator adjectives (e.g. *former*, *alleged*) and superlatives. Scope effects for operator adjectives have been discussed before (e.g. Montague 1970, Partee 2003, and references therein), but the significance of these effects for theories of rigid adjective ordering have not been drawn out in previous literature. Superlatives have not been previously discussed in this context, but we will see that they too, have flexible word order. In addition, it will be shown that the order of multiple adjectives can be affected by the presuppositions of the article immediately preceding the modified noun phrase. I argue that these phenomena, taken together, suggest that adjective orderings are sensitive not only to the meaning of individual adjectives, but also to that of the whole determiner phrase. This in turn implies not only that current theories of adjective ordering are inadequate, but that the very framework which they assume, where there is very limited information flow between syntax and semantics (Chomsky 1995 and following literature), may have to be modified. Some of these broader implications are discussed in the concluding chapter of the disseration.

Chapter 2

A saliency theory of superlatives

2.1 Introduction

2.1.1 Superlatives with multiple readings

The interpretation of superlatives has received a lot attention in the theoretical literature, especially in recent years. At the core of the debate there have been examples like (5), where the presence of the attributive superlative *highest* gives rise to two interpretations. This phenomenon was first noted in Ross 1964, but see also Jackendoff 1972, Szabolcsi 1986, and Heim 1985 for early work in this area.

(5) John climbed the highest mountain.

Following Szabolcsi (1986) I will refer to these two interpretations as the "absolute reading" and the "comparative reading"[1]. They are shown in (6).

[1]The "comparative reading" is also sometimes referred to as the "relative reading" (Heim 1985, 1999)

(6) a. *Absolute reading*:

John climbed a mountain higher than all other mountains.

b. *Comparative reading*:

John climbed a mountain higher than (the mountains) everyone else climbed.

On the absolute reading the sentence in (5) is understood to claim that John climbed the highest mountain of all mountains. To be true under this interpretation, (5) needs to describe a situation where John climbed Mount Everest, for example, which we know to be the highest mountain of all the mountains on Earth. On the comparative reading the sentence in (5) conveys something weaker, namely that John climbed a higher mountain than other individuals did. Under this second interpretation, (5) can truthfully describe a situation where John climbed Mount Bonnell, which at 785ft is basically a hill[2], as long as no one else climbed anything higher.

Superlatives with multiple interpretations appear not only in declarative sentences but also in interrogative ones.The question in (7) can be interpreted either as in (7a) or as in (7b). *Nobody* is a felicitous answer to the question under the absolute but not under the comparative reading.

(7) Who climbed the highest mountain?

a. Absolute reading: Who climbed Mt. Everest?

b. Comparative reading: Who climbed a mountain that was higher than anybody else climbed?

[2]Despite its low height, or maybe because of that, Mount Bonnell is one of the popular tourist spots in Austin, Texas.

Even though the literature refers to the two interpretations of superlatives shown above as two distinct readings, I will argue in this chapter that they are not as different in nature as this terminology suggests.

The standard view on superlatives is that absolute readings and comparative readings are subject to very different constraints. There is widespread agreement that absolute readings are the result of the truth-conditional semantics of superlatives in conjunction with a set of pragmatic constraints. These pragmatic constraints however, are deemed insufficient or inadequate for deriving the comparative reading and it is argued that an additional constraint is needed for such cases. The exact nature of this constraint is controversial and several proposals have been advanced. Some previous approaches explain the difference between absolute and comparative readings as a scope ambiguity and claim that comparative readings are constrained in a way that makes them syntactically (Heim 1999, Szabolcsi 1986) or semantically (Farkas and Kiss 2000) different from absolute readings. Other previous approaches derive the difference as being focus-related and argue that comparative readings are a function of the focus semantic value of the sentence (Sharvit and Stateva 2002, Gutierrez-Rexach 2006).

In contrast to the standard approach, I propose a saliency theory of superlatives under which comparative and absolute readings are very similar in nature. According to this view there is technically no comparative reading; only a restricted absolute reading on which the elements in the comparison set are made salient by virtue of their association with a salient individual. The proposal has a predecessor in Heim 1999, but it differs from it in that here the relation between the elements

in the comparison set and the salient individuals is not necessarily given by the predicate of the sentence containing the superlative. The second, and more important difference, is that on the account presented here the saliency theory is argued to be sufficiently powerful to account for all readings and that there is no need to supplement it with a syntactic mechanism to derive the comparative reading.

2.1.2 Overview

I start by presenting some background on superlatives constructions, namely how they are similar to, as well as different from, other degree constructions, and introduce the terms that I will be using to refer to their anatomy - the notions of comparison set and topic of comparison (section 2.2.1). This sets the stage for introducing the classic analysis of the truth-conditions of superlatives, as well as the pragmatic constraints that the interpretation of superlatives is subject to (section 2.2.2). There is general agreement on what these constraints are and that they yield absolute readings. In contrast, the way in which comparative readings come about is much less clear.

In section 2.3.1 I introduce the standard view on the interpretation of superlatives, which holds that comparative readings are essentially different from absolute readings. Unlike the latter, comparative readings are typically seen as the result of a special constraint. The nature of this constraint, however, is not settled upon. For some, comparative readings are an instance of a syntactic phenomenon (2.3.2), while for others they reflect a contrast in the interpretation of the modified noun (2.3.3). Yet others argue that comparative readings are dependent on the presence

of focus and derive them as a focus effect (2.3.4). I will refer to such analyses that use a special constraint to derive the comparative reading as *comparative theories* of superlatives and in section 2.3.5 present the type of empirical arguments that have been used to motivate it.

Contra the standard approach to the interpretation of superlatives, I propose in section 2.4 a non-comparative analysis, where comparative readings have the same syntactic and semantic properties that absolute readings do, and do not need to be licensed by focus. The difference between the two interpretations lies instead in the type of elements that the context makes salient. I show that this saliency theory can derive all the classic comparative readings that comparative theories derive and that, in addition, it is methodologically simpler. In chapter 3 I argue that the saliency theory is also to be preferred on empirical grounds.

2.2 Absolute readings

2.2.1 The anatomy of superlatives

Before presenting how the absolute reading of superlatives comes about let me first introduce some background and terminology on superlative constructions.

Similarly to other degree constructions, superlatives are concerned with relative position on some scale. What is specific to superlatives though is that they encode comparison among the members of some set. Consider (8), where the superlative appears in predicative position, and compare it to the comparative and equative examples in (9).

(8) John is the tallest.

(9) a. John is taller than Bill.

b. John is as tall as Bill.

In all three examples John's height is compared to some reference value. In the comparative and equative sentences however, John's height is described relative to that of a single individual, Bill, while in the superlative construction it is compared to that of a set of individuals, which John is a part of. That the superlative morpheme is picking out one member of a set by virtue of that individual being at the top of some scale is also transparent from the following paraphrase, which uses a comparative construction with a universal restrictor: *John is taller than everyone else*. I will refer to John as the topic of comparison and to the set of individuals that he is compared to as the comparison set.

With this background and terminology in place, the next section turns to the standard semantics of superlatives and discusses the factors that determine the make-up of the comparison set on the absolute reading.

2.2.2 The truth-conditions and presuppositions of superlatives

What we called the *absolute reading* in section 2.1.1 is the default interpretation of superlatives. A variety of sentences have this reading (10) and it so happens that in some cases there is a *comparative reading* available in addition to the absolute one (10b,c).

(10) a. Mary is the best (mom).

b. John read the longest book.

c. Sarah gave Naomi the most expensive present.

In contrast to the comparative reading, the absolute reading is relatively uncontroversial. This section introduces the set of assumptions that previous approaches to superlatives have in common and illustrates how they derive the absolute reading of potentially ambiguous superlative sentences like (5) or (10b,c).

To formalize the meaning of superlatives two assumptions are standardly made. First, gradable adjectives are taken to denote relations between individuals and degrees as shown in (11a).[3] All relations of this type are necessarily downward-monotonic (11b).

(11) a. [high](d)(x) = 1 iff x is high to degree d

b. R is a (strictly) downward-monotonic relation relative to a scale iff
$\forall x, d, d' [R(d)(x)=1 \ \& \ d > d' \rightarrow R(d')(x)=1]$
(Seuren 1973, Cresswell 1976)

Secondly, the superlative morpheme is analyzed as denoting a function, which takes three arguments: a free variable C, which introduces an implicit restriction on the domain of the superlative quantifier[4], a relation R of type $<d,et>$, and an individual. Its lexical entry is given in (12).

[3]For two different semantic analyses of gradable adjectives see on the one hand Kamp 1975, Klein 1980, and on the other hand Bartsch and Vennemann 1972, Kennedy 1997.

[4]The set of elements that natural language quantifiers range over is typically subject to contextual restrictions. For example, a sentence like *Everyone laughed.* doesn't mean that everyone in the world laughed (or everyone in the domain of individuals for that matter) but rather that only a contextually salient set of people laughed. Following von Fintel 1994 the context-dependent nature

(12) The truth-conditions of *-est* (Heim 1999)

[-est](C)(R)(x) = 1 iff $\exists$d[R(d)(x)=1 & $\forall$y [y$\neq$x & y$\in$C $\rightarrow$ R(d)(y)=0]]

According to this denotation the superlative morpheme ranges over some set of salient individuals and picks out a unique individual such that its degree of R-ness is the highest. The relation R is determined by the denotation of the adjective in conjunction with that of the head noun.[5]

In addition, for superlatives to be felicitous the set of salient individuals must be of the right sort. It must contain at least two individuals, one of whom is the topic of comparison (13a)[6], and each individual in the comparison set must have some degree of R-ness (13b).[7]

(13) The presuppositions of *-est* (Heim 1999)

a. [est](C)(R)(x) is undefined unless x$\in$C & $\exists$y[y$\neq$x & y$\in$C]

b. [est](C)(R)(x) is undefined unless $\forall$x[x$\in$C $\rightarrow$ $\exists$d[R(d)(x)=1]]

---

of the superlative quantifier is represented here as an additional argument, which is a phonetically unrealized predicate variable that receives its value from the context of utterance. For further discussion of the context-dependency of natural language quantifiers and range of possible analyses, see Vol 15, Issue 2/3 of Mind and Language.

[5]See chapter 4, section 4.5 for empirical motivation of why R is not determined solely by the adjective when the superlative appears in attributive position.

[6]See however, Stateva 2005 for an analysis where the topic of comparison is not a member of the comparison set.

[7]Groenendijk et al. 1995 and Gutierrez-Rexach 2006 argue that moreover, the individuals in the comparison set need to be associated to different degrees of R-ness. That is, there are no two members in the comparison set that have the same degree of R-ness.

Equipped with these meanings for gradable adjectives and the superlative morpheme let us now examine how the absolute reading of superlative sentences like (14) is derived. Example (14) is very similar to example (5) provided in section 2.1; it has the absolute reading shown in (14a), as well as the comparative reading given in (14b).

(14) John climbed the highest skyscraper.

a. *Absolute reading*

John climbed a skyscraper higher than all other skyscrapers.

b. *Comparative reading*

John climbed a skyscraper higher than (the skyscrapers) everyone else climbed.

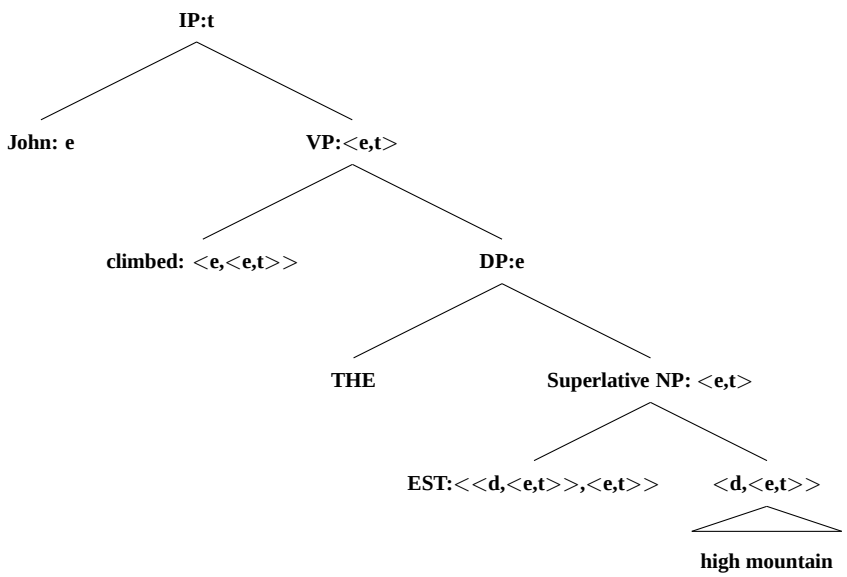
Unlike the superlative sentences in (8) or (10a), where the topic of comparison was the subject of the sentence, on the absolute reading of (14) the topic of comparison is the referent of the superlative noun phrase *the highest skyscraper*.

The derivation for the absolute reading is shown in (15) and (16). The LF indicates that the superlative morpheme is interpreted inside the determiner phrase containing it and has scope not only over the adjective but also over the head noun.

(15) Deriving the absolute reading

a. LF: [$_{IP}$ John climbed [$_{DP}$ the [$_{SuperlNP}$ -est high skyscraper]].

b.



The meaning of the whole sentence comes out as: John climbed the unique x such that there is a degree d, x is a d-high skyscraper and for any other y in the domain different from x, y is not a d-high skyscraper.

(16) a. Denotation of the superlative noun phrase:

λx:x$\in$C.[$\exists$d[x is a d-high skyscraper & $\forall$y [y$\in$C & y$\neq$x $\rightarrow$ y is not a d-high skyscraper]]]

b. Denotation of the sentence:

$\exists$d [$\exists$x:x$\in$C.x is a d-high skyscraper and John climbed x & $\forall$y [y$\in$C & y$\neq$x $\rightarrow$ y is not a d-high skyscraper]]

The presuppositions built into the intepretation of the superlative morpheme ensure that the comparison set is determined by a conjunction of grammatical and contextual factors. To be part of the comparison set on the absolute reading of (14) a given element must fulfill two requirements: it must have some degree of R-ness, where R is denoted by the adjective and noun constituent that the superlative

morpheme takes scope over, and it must be contextually salient. In our case, this means that the comparison set must consist of salient skyscrapers.

(17) The comparison set on the absolute reading

$C_{absolute}$ = set of contextually salient skyscrapers

To illustrate how the implicit restriction on the domain of the superlative quantifier affects the intepretation of (14), let us consider two different utterance contexts. Suppose that (14) is uttered in a conversation about skyscrapers in the US. In this case (14) means that John climbed Sears Tower and that he still has some work to do before he can take on Alain Robert who climbed Taipei 101, the tallest skyscraper in the world. If however the conversation is about skyscrapers on all 7 continents then (14) would make a bigger claim, namely that John equalled Alain Robert's world record.[8]

This section has shown that the absolute reading is the result of the truth-conditions of the superlative construction in conjunction with a set of contextual and presuppositional constraints. The next section focuses on the comparative reading and discusses the constraints that determine the make-up of the comparison set in these cases.

[8] Alain Robert is a French climber famous for scaling skyscrapers. His achievements have earned him the nickname "Human Spider". See the April 20, 2009 issue of The New Yorker magazine for an editorial on him.

2.3 Comparative readings

2.3.1 Comparative theories of superlatives

The literature on the interpretation of superlatives is centered on the comparative reading and how it differs from the absolute one. While it is clear that the source of this interpretation contrast is the comparison set, the way in which the comparison set is constrained in comparative readings and how exactly it differs from the comparison set in absolute readings is open to debate.

Previous analyses of superlatives concur that the pragmatic constraints restricting the comparison set on the absolute reading are insufficient or inadequate in generating comparative readings and that comparative readings involve a special restriction. I will refer to such approaches as comparative theories of superlatives and present how they derive the comparative reading of (14) in the next three sections.

Comparative theories vary along three dimensions. One is the nature of the restriction operating on the comparative reading. Another is whether the topic of comparison stays the same on both readings or not. Finally, the third dimension of variation is the semantic treatment of the definite article preceding the superlative.

The analyses described in sections 2.3.2 and 2.3.3 propose to derive the interpretation contrast between absolute and comparative readings as a scope ambiguity and build this difference into the grammar of the superlative. Unlike on the absolute reading where the superlative morpheme is interpreted with narrow scope - its scope being limited to the adjectival/N' constituent that appears to its right (cf. sections 2.2.2 and 4.5) - on the comparative reading the superlative morpheme is

argued to take wide scope; at least as wide as the verb phrase containing the superlative noun phrase. Section 2.3.2 presents an analysis where the explanation for this scope contrast is argued to be syntactic in nature. Section 2.3.3 introduces an analysis where it is represented as an essentially semantic phenomenon.

In section 2.3.4 I describe a third type of comparative theory which instead of resorting to scope ambiguity derives the difference between absolute and comparative readings as the result of superlatives associating with focus. Under this view comparative readings (but not absolute ones) are in part (Sharvit and Stateva 2002) or entirely (Gutierrez-Rexach 2006) determined by focus constraints, the range of elements in the comparison set being a function of the focus semantic value of the sentence containing the superlative.

Out of the three types of comparative approaches only the syntactic one (section 2.3.2) claims that the topic of comparison is not the same on both readings. Finally, the contribution of the definite article is as debated as the comparative reading itself and each analysis has its own version of what this contribution is.

2.3.2 The comparative reading as a syntactic ambiguity

This section presents a syntactic approach to comparative readings.

Szabolcsi 1986 and Heim 1999 propose to derive the meaning contrast between absolute and comparative readings from a syntactic contrast, where the two readings are associated with different LFs. Specifically, they suggest that superlative constructions like (14), repeated here as (18), are syntactically ambiguous between a representation where the -est operator appears inside its host determiner

phrase (18a) and one where it appears externally (18b). As discussed in section 2.2.2 the first logical form corresponds to the absolute reading. The second logical form is needed to derive the comparative reading.

(18) John climbed the highest skyscraper.

a. LF_1: John climbed [$_{DP}$ the [$_{SuperlNP}$ -est high skyscraper].

b. LF_2: John -est$_C$ climbed [$_{DP}$ A [$_{SuperlNP}$ t$_{est}$ high skyscraper]].

Under this view, comparative readings are syntactically and semantically special. Syntactically, they differ from absolute readings in that the -est operator has moved from its host position inside the DP and has adjoined to an intransitive VP. The semantic effect of this movement operation is that in comparative readings the comparison set is very different from the one in absolute readings. Instead of comparing skyscrapers, we are now comparing people. Here's how this works: when the superlative morpheme moves out of its host DP it leaves behind a trace of type d and introduces abstraction at the landing site, as shown in (19).

(19) Deriving the comparative reading via covert movement

[$_{IP}$ John [-est$_C$ λd [$_{VP}$ climbed [$_{DP}$ A [$_{SuperlNP}$ *d*-high skyscraper]]]]]

The result is that the <d,et> argument of -est is no longer saturated with the denotation of the noun phrase, but rather with the denotation of the verb phrase (plus lambda abstraction). This means that the comparison relation R has changed from *high skyscraper* to *climbed a high skyscraper*. As a consequence, the range of elements that make up the comparison set also changes: we are now comparing people rather than skyscrapers. Remember from section 2.2.2 that for the superlative func-

tion to be defined all elements in the domain restriction of -est must have some degree of R-ness. This in turn triggers a change in the topic of comparison since superlatives encode comparison among the members of the same set. On the comparative reading the topic of comparison is no longer the referent of the superlative noun phrase, but rather the referent of the subject phrase.

(20) The comparison set on the comparative reading

$C_{comparative}$ = the set of all salient individuals such that they climbed a d-high skyscraper

The meaning for the comparative reading is: there is a degree d such that John climbed a d-high skyscraper and for any other y in the domain different from John, y did not climb a d-high skyscraper (21).

(21) a. Denotation of the superlative noun phrase:

λz.[z is a d'-high skyscraper]

b. Denotation of the verb phrase (and lambda abstraction):

λd'.λx.$\exists$z.[z is a d'-high skyscraper and x climbed z]

c. Denotation of the sentence:

$\exists$d [$\exists$z [z is a d-high mountain and John climbed z] & $\forall$y [y$\in C_{comparative}$ & y$\neq$John $\rightarrow$ $\neg$ $\exists$v[v is a d-high mountain and y climbed v]]]

Note that when the -est operator extracts from the determiner phrase, it is assumed that the determiner *the* is interpreted just like the indefinite *a*. This is motivated by Szabolcsi's (1986) observation that superlatives behave like definites only on the absolute reading, while on the comparative reading they are similar to

non-specific indefinites. This assumption also has the welcome result that -est is no longer inside an island. If the determiner phrase containing the superlative were to be interpreted as definite, like on the absolute reading, the extraction of -est would have been illegitimate. Definite determiner phrases are strong islands and the covert movement of operators is required to obey the same constraints as overt movement. However, with the determiner being interpreted as an indefinite, -est is no longer inside an island, since indefinites do allow extraction.

To summarize, according to the syntactic approach to superlatives, the interpretation contrast between the absolute and the comparative reading is explained by the following correlation. On the absolute reading the superlative morpheme stays in-situ and THE is interpreted as a definite determiner. On the comparative reading the superlative morpheme undergoes covert movement and is interpreted in a VP-adjoined position. Additionally, on this reading THE is actually interpreted as an indefinite determiner. Manipulating the scope of -est syntactically ensures that the comparison set is constrained linguistically in two different ways, each corresponding to one of the two readings. On the absolute reading we compare skyscrapers with respect to their height and the topic of comparison is the referent of the superlative noun phrase, while on the comparative reading we compare people with respect to their achievements of climbing skyscrapers and the topic of comparison is John.

2.3.3 The comparative reading as a semantic ambiguity

In this section I present a semantic version of the scope ambiguity approach to the interpretation of superlatives.

Unlike the syntactic approach in the previous section, Farkas and Kiss 2000 propose to derive the contrast between the absolute and the comparative readings by means of semantic devices. Under this view, the superlative operator doesn't need to undergo covert movement and is interpreted inside its host DP on both absolute and comparative readings (22). Consequently, in both cases the R argument of -est is an adjectival/N′ constituent, never a VP.

(22) John climbed the highest skyscraper.

LF: [$_{IP}$ John climbed [$_{DP}$ the [$_{SuperlNP}$ -est high skyscraper]].

Instead, Farkas and Kiss 2000 propose to capture the contrast between the two readings by varying the interpretation of the head noun. On the absolute reading its interpretation is very similar to that discussed in section 2.2.2.[9] On the comparative reading however, the head noun receives a functional interpretation, which I will present shortly. The idea is that under the functional interpretation the predicate of the sentence containing the superlative affects the interpretation of the N' constituent and since the N' constituent is the R argument of -est, this essentially widens the scope of -est.

Under this analysis the topic of comparison stays the same on both readings – it is the referent of the superlative noun phrase – but the range of elements in

[9]Farkas and Kiss (2000) actually assume that gradable adjectives denote measure functions from individuals to degrees (as argued extensively in Kennedy 1997).

the comparison set varies as the comparison set is subject to different restrictions. On the absolute reading the comparison set consists of salient skyscrapers. On the comparative reading it consists of sets of skyscrapers climbed by individuals in a set B. Following Szabolcsi 1986, Farkas and Kiss 2000 claim that comparative readings are possible only when the superlative associates with a focus or wh-phrase. The set of individuals B is the set of alternatives to the focus/wh-phrase. Suppose that in the example under discussion, the subject phrase *John* is focused. The comparison set on the comparative reading consists of the elements in (23).

(23) The comparison set on the comparative reading

$C_{comparative}$ = the set of skyscrapers climbed by individuals other than John

To constrain the comparison set in this way Farkas and Kiss 2000 argue that on comparative readings the head noun receives a functional intepretation as shown in (24). In (24) the head noun bears two indices: a function index f and an argument index i. The function f is given by the predicate of the sentence in which the superlative occurs. The index i is a bound variable, which is co-valued with the variable created by the movement of the focus/wh-phrase that the superlative associates with. In our case the function f is *climb*. It associates the individuals in the set B with sets of skyscrapers that they climbed.

(24) Deriving the comparative reading via functional interpretation

[highest sckyscraper$^{i}{}_{f}$] = highest skyscraper x such that x$\in f_{climb}$(i) and for all b for all y, if y is a mountain and y $\in f_{climb}$(b), and i$\neq$b, HEIGHT(x) $>$ HEIGHT(y)

(Farkas and Kiss 2000)

The semantic ambiguity approach to superlatives is similar to the syntactic ambiguity approach presented in section 2.3.3 in that in both cases on the comparative reading the comparison set is constrained by the predicate of the sentence in which it occurs. On the semantic ambiguity approach however, the comparative reading is no longer syntactically different from the absolute one. It is only semantically different. The comparison set is now constrained using functional interpretation, rather than covert movement, the result being that the topic of comparison stays the same on both readings. In addition, on the semantic ambiguity approach there is no need to stipulate that THE is interpreted as an indefinite determiner whenever the superlative noun phrase receives a comparative reading. Under this approach, THE is treated as a definite article on both absolute and comparative readings.

2.3.4 The comparative reading as a function of focus values

Not all comparative theories of superlatives represent the contrast between absolute and comparative readings as a scope ambiguity. This section introduces a discourse approach to superlatives, where this interpretation contrast is the result of focus constraints.

There are two versions of the discourse approach: Sharvit and Stateva 2002, and Gutierrez-Rexach 2006. Both analyses argue that comparative readings are focus-related.[10] Specifically, comparative readings are considered to be the result

[10]This generalization relies on the assumption that in English focus is only optionally marked by prosodic prominence. See section 3.2.2 for details.

of the superlative associating with a focus phrase[11].

The discourse approach to superlatives is similar to the scope ambiguity approach in that here too, comparative readings involve a special type of constraint. Unlike the scope ambiguity approach, which restricts the comparison set via covert movement (section 2.3.2) or functional interpretation (section 2.3.3), the discourse approach restricts it by means of focus constraints. Here, the comparison set is determined in part, or entirely, by the focus semantic value of the sentence in which the superlative occurs.

To illustrate how this works let us go back to our superlative sentence in (14), which is reproduced below, this time with focus on the subject phrase.

(25) [John]$_F$ climbed the highest skyscraper.

Both Gutierrez-Rexach, and Sharvit and Stateva assume that the superlative DP needs to QR before the focus semantic value of the sentence can be computed.[12] In doing so, the superlative DP leaves behind a trace of type e and introduces lambda abstraction at the landing site (26a). The focus semantic value of the sentence is obtained by replacing the focused phrase *John* with an existential quantifier as shown in (26b).

(26) The focus semantic value of the sentence

[11] Sharvit and Stateva 2002:485 argue that comparative readings may also be the result of the superlative morpheme being focused. For them all sentences with a superlative contain a focused element; when the superlative doesn't associate with focus it is the superlative morpheme itself that bears focus.

[12] See also Heim 1999.

a. [the highest$_C$ skyscraper] [$_{IP}\lambda$x [[John]$_F$ climbed x]].

b. [IP]^f = λx.$\exists$y.[y climbed x]

The two analyses differ however, in how they use this focus semantic value to constrain the comparison set. For Sharvit and Stateva the focus semantic value affects the comparison set (C) only in part - context being responsible for the rest (cf. 27a), while for Gutierrez-Rexach it single handedly determines it (cf. 27b).[13]

(27) Deriving the comparative reading as a focus effect

a. C $\subseteq$ [IP]^f (Sharvit and Stateva 2002)

b. C = [IP]^f (Gutierrez-Rexach 2006)

Applied to our example these constraints can be re-written as in (28a) and (28b) respectively.

(28) a. C $\subseteq$ {x|$\exists$y.y climbed x}

b. C = {x|$\exists$y.y$\in$ALT(John) & y climbed x}

(where ALT(John) is the set of alternatives to John)

In order to relate the comparison set C to the focus semantic value of the sentence as shown in (27) or (28), an additional operation is needed. Remember from section 2.2.2 that the comparison set C over which the superlative morpheme

[13]Gutierrez-Rexach doesn't give details about the nature of this constraint; he only quotes Rooth 1985, 1992. For Sharvit and Stateva the constraint is pragmatic in nature (cf. Rooth 1992). The focus operator ~attaches at the sentence level and introduces an anaphor K which denotes a subset of the focus semantic value of its sister. The anaphor K is assumed to have an antecedent in C, the domain restriction of -est.

ranges is a set of individuals. In contrast, the focus semantic value of the sentence is a set of sets of individuals (26b). Both analyses use a unification operation to turn the set C into a set of sets of individuals.

Integrating the constraints in (27) with the presupposition that all the individuals in the comparison set must have some degree of R-ness, the two discourse analyses predict that on the comparative reading of (25) the comparison set is a set of sets of skyscrapers climbed by relevant people. For Sharvit and Stateva both the climbers and the skyscrapers are individuals that the context makes salient (29).

(29) The comparison set on the comparative reading (Sharvit and Stateva 2002)
$C_{comparative}$ = the set of sets of salient skyscrapers climbed by salient individuals

In contrast, for Gutierrez-Rexach only the climbers are salient and they need to be different from John (30).

(30) The comparison set on the comparative reading (Gutierrez-Rexach 2006)
$C_{comparative}$ = the set of sets of skyscrapers climbed by salient individuals other than John

The discourse approach and the semantic scope ambiguity analysis share a couple of similarities, which set them apart from the LF scope ambiguity account.[14] One similarity is that on both absolute and comparative readings, the topic of comparison is determined by the interpretation of the superlative DP, meaning that we're

[14]Note that Gutierrez-Rexach's version of the discourse approach also makes very similar predictions to Farkas and Kiss 2000's account, as the make-up of the comparison set on the comparative reading is the same (cf. (30) vs. (23)).

always comparing skyscrapers. The other similarity is that the interpretation of the determiner THE heading the superlative noun phrase is independent of the meaning of the superlative. Gutierrez-Rexach 2006 analyzes THE as a generalized quantifier with uniqueness requirements, whereas Sharvit and Stateva 2002 claim that it is sometimes interpreted as a definite article and sometimes as an indefinite one, but that these two meanings stand in a free variation relation.

2.3.5 Motivating comparative theories of superlatives

The previous sections have introduced the standard view on the interpretation of superlatives according to which the comparative readings is essentially different from the absolute reading. Unlike absolute readings, comparative readings are derived by means of a special constraint whose nature varies from one comparative theory to another (cf. sections 2.3.2, 2.3.3, and 2.3.4). This section discusses the type of empirical arguments that have been used to motivate this special constraint.

The motivation for adopting a comparative theory comes in two forms: a strong version and a weak version. The strong version claims that all comparative readings need to be derived by means of a comparative theory. That is to say that comparative readings necessarily involve some special constraint that absolute readings do not. Most comparative theories (Szabolcsi 1986, Farkas and Kiss 2000, Gutierrez-Rexach 2006, Sharvit and Stateva 2002) fall in this strong category. They argue that comparative readings depend on the presence of a focus or wh-phrase in the sentence containing the superlative - in other words, they require licensing - and that they always involve a comparison set which is constrained by the predicate of

the sentence.

The second type of motivation for a comparative theory involves a weaker claim according to which only a certain class of comparative readings and superlatives require a comparative theory. Heim 1999 argues that *upstairs de-dicto* readings, which are a type of comparative readings that appear in intensional environments, can only be derived using the syntactic approach to superlatives described in section 2.3.2. Additional support for the syntactic approach comes from unambiguous superlatives. These are superlatives that either lack an absolute reading or lack a comparative reading and whose missing reading has been argued to involve an illicit syntactic configuration (Schwarz 2004b, 2005; Teodorescu 2007). Other comparative readings and superlatives do not necessarily involve a syntactic constraint, but in the absence of evidence to the contrary we can extend the syntactic approach to account for all of them. If we did, comparative readings would form a natural class that differs from absolute readings in their syntactic and semantic properties (cf. section 2.3.2). Such an extension receives support from Szabolcsi's 1986 generalization that superlatives with comparative readings, but not those with absolute readings, behave like indefinites.

This suggests that any empirical evaluation of comparative theories must distinguish among them based on whether they adopt the strong or the weak claim. In the next section I propose a non-comparative theory of superlatives where the difference between absolute and comparative readings is due to a saliency effect and show that it can derive all the classic comparative readings that comparative theories derive but with a smaller set of constraints. In the next chapter I argue that

this non-comparative approach is empirically more adequate than both strong and weak comparative theories.

2.4 Proposal: a non-comparative approach to superlatives

In contrast to the standard approach to superlatives, I propose in this section a saliency theory of superlatives where the meaning contrast between absolute and comparative readings is the result of contextual variation and where comparative readings are possible even when the superlative does not associate with a focus/wh-phrase. The only difference between the two interpretations is the type of elements that are salient in the context surrounding the superlative (section 2.4.1).

More generally, under the saliency theory superlatives have a variety of interpretations that differ from each other only in terms of the contextual restrictions imposed on the comparison set. Under this view, there is technically no comparative reading, only a variety of absolute readings - some of which are more restricted than others. I argue that these contextual restrictions can account for all the classic comparative readings that comparative theories derive but in a simpler way (section 2.4.2). In chapter 3, I provide evidence that the saliency theory is also to be preferred on empirical grounds.

2.4.1 The comparative reading as a saliency effect

This section presents the basic analysis of comparative readings under the saliency theory. It is argued that there is no essential difference between absolute and comparative readings and that the pragmatic constraints governing the interpretation of superlatives can account for both of them.

We have seen in section 2.2.2 that the function of the superlative is to pick out of a comparison set a unique individual such that its degree of R-ness is the highest (31a) and that the comparison set must satisfy a number of pragmatic constraints: it must contain at least two individuals (31b) and it must be a subset of the right domain of R (31c).

(31) a. [-est](C)(R)(x) = 1 iff $\exists$d[R(d)(x)=1 & $\forall$y [y$\neq$x & y$\in$C $\rightarrow$ R(d)(y)=0]]

b. [est](C)(R)(x) is undefined unless x$\in$C & $\exists$y[y$\neq$x & y$\in$C]

c. [est](C)(R)(x) is undefined unless $\forall$x[x$\in$C $\rightarrow$ $\exists$d[R(d)(x)=1]]

(Heim 1999)

In addition, like all natural language quantifiers, the domain of the superlative quantifier is subject to contextual restrictions. The comparison set does not range over all individuals that have some degree of R-ness, but rather only over those that are contextually salient. This saliency constraint on the comparison set is represented in (31) as a free variable C.

I propose that the meaning contrast between the absolute and the comparative reading is not syntactic or semantic in nature as the scope ambiguity approach suggests (sections 2.3.2 and 2.3.4), but rather contextual. Under the saliency theory

absolute and comparative readings have the same syntactic and semantic properties, the meaning difference between the two intepretations being simply a reflection of the different values that the free variable C receives. Here, the comparison relation R is always determined solely by the adjective (and noun) that the superlative takes scope over. The only contrast between superlatives with an absolute reading and those with a comparative reading is the type of elements that are salient in the utterance context. In contrast to the discourse approach the restrictions imposed by context on the comparison set are not necessarily a focus effect.

To illustrate this, let us consider the superlative sentence in (32). For ease of comparison among theories, this is the same example that I used in the previous two sections to show how absolute and comparative readings have been analyzed in the literature.

(32) John climbed the highest skyscraper.

The meaning assigned to superlatives in (31) entails that the comparison set will always consist of individuals that have some degree of R-ness and are salient. Since under the saliency theory the comparison relation R does not change, it means that both on the absolute and the comparative reading of (32) the comparison set consists of individuals that are *high skyscrapers*. I suggest that the meaning difference between the two superlative interpretations follows from a saliency effect according to which the skyscrapers in the comparison set are either salient in and of themselves or are made salient by virtue of their association with a salient individual.

Suppose that our sentence is uttered in a context where we are talking about

skyscrapers. The free variable C collects all the salient skyscrapers and our sentence receives an absolute reading (33), where the superlative describes an individual whose degree of R-ness (33a) is higher than that of any other individual in the comparison set (33b).

(33) *Absolute reading*

John climbed a skyscraper higher than any other skyscraper.

a. R = λd.λx. x is a d-high skyscraper

b. C = λx.[$\exists$d.[R(d)(x)=1] & salient(x)]

c. Denotation of the superlative noun phrase

[highest skyscraper](v) = 1 iff $\exists$d[v is a d-high skyscraper & $\forall$y [y$\neq$v & y is a salient skyscraper $\rightarrow$ y is not a d-high sckyscraper]]

Suppose now that the same sentence appears in a context where the conversation is centered on people who climbed skyscrapers. The function of the free variable C is to collect contextually salient individuals but it cannot pick these ones because of the presuppositional constraint that all the elements in the comparison set must have some degree of R-ness (31c). Since under the saliency theory the comparison relation R is always determined by the denotation of the constituent in the scope of the superlative morpheme, the free variable C is forced to choose among individuals that are *high skyscrapers*. I propose that the comparative reading is the result of the free variable C selecting all the skyscrapers that are made salient by virtue of their being associated with one of these salient individuals. The association between the salient individuals and the corresponding skyscrapers is not necessarily a one to one mapping. It may be that some of these salient peo-

ple climbed more than one skyscraper. This is formalized in (34), where Assoc is a salient function that maps salient individuals to corresponding sets of elements such that each of these elements has some degree of R-ness.

(34) Assoc(Z) = {Assoc(z) | z∈ Z}, where

- Assoc is defined as Assoc:Z $\rightarrow 2^X$,
- Z is a set of salient individuals,
- X is a set of individuals that have some degree of R-ness, and
- R is a relation of type <d,et> determined solely by the meaning of the adjective and noun that the superlative morpheme takes scope over

The meaning of our superlative sentence can then be paraphrased as in (35) where, just like above, the superlative describes an individual whose degree of R-ness (35a) is higher than that of any other individual in the comparison set (35b). The difference between the absolute and the comparative reading is that in the latter case the skyscrapers are made salient by virtue of being associated with salient individuals.

(35) *Comparative reading*

John climbed a skyscraper higher than the skyscrapers that any other individual climbed.

a. R = λd.λx. x is a d-high skyscraper

b. C = λx.[$\exists$d.[R(d)(x)=1] & x∈ Assoc(z)]
(where z∈Z, a set of salient individuals)

c. Denotation of the superlative noun phrase

[highest skyscraper](v) = 1 iff ∃d[v is a d-high skyscraper & ∀y [y≠v & y is a skyscraper & y∈ Assoc(z) → y is not a d-high sckyscraper]]

Independent evidence showing that context can affect interpretation via a saliency function comes from so-called paycheck sentences like (36). We understand the pronoun *it* in (36) to refer to a check that's somehow associated with Fred, rather than John.

(36) John puts his paycheck under the mattress whereas Fred always puts it into a bank.

The saliency theory has a predecessor in Heim 1999's pragmatic account, but differs from it in two respects. Unlike Heim, I explicitly argue in section 3.2.1 that the association between salient individuals and the entitities denoted by the N' constituent that the superlative takes scope over is not necessarily given by the predicate of the sentence. The second, and more important difference, is that here the pragmatic approach does not need to be supplemented with a syntactic analysis in order to account for the whole range of data. In contrast to the weak comparative approach advocated in Heim 1999, the saliency theory has therefore the methodological benefit of providing a uniform account of comparative readings.[15]

The next section discusses the saliency theory in more detail and shows that it can derive all the classic comparative readings that comparative theories derive, but without any of the special assumptions that these theories make.

[15]For an empirical argument against the weak syntactic theory of Heim see sections 3.3 and 3.4.

2.4.2 Varieties of superlative interpretations

Comparative theories account for the difference between absolute and comparative readings of superlatives either by using a grammatical device that changes the comparison relation R or by resorting to a licensing requirement that analyzes comparative readings as being focus-dependent. Under the saliency theory neither of these constraints is needed. Superlatives have a variety of interpretations all of which are the result of contextual restrictions imposed on the comparison set and comparative readings are possible independently of whether the superlative associates with a focus/wh-phrase or not. This has a number of conceptual and empirical advantages that I discuss below.

As discussed in section 2.2.2, there is general consensus that absolute readings arise as the result of two types of constraints: a grammatical constraint according to which the comparison relation R is determined by the adjective (and noun) that the superlative takes scope over and by a set of pragmatic constraints that require the comparison set to consist of individuals that are contextually salient and have some degree of R-ness. The context-sensitivity of superlatives accounts for why there are so many types of absolute readings, all of which are restricted versions of the original absolute reading illustrated above. Consider for example the superlative sentences in (37). In (37a) saliency narrows down the set of individuals that have some degree of R-ness to those that are *in US*; in (37b) the set of salient diamonds are those that *she had ever seen*. The contextual restrictions imposed on the comparison set are not provided by sentence internal material only. Information outside the sentence that contains the superlative can also narrow down the

comparison set. This is illustrated by example (37c).

(37) a. Alain Robert climbed the highest skyscraper in US.

b. There it was: the largest diamond she had ever seen.

c. There are ten MA and thirty-five students in our department. The smartest of the foreigners is Sasha. (from Gutierrez 2006:249)

Unlike previous approaches to superlatives, the saliency theory takes this context-sensitivity of superlatives one step further and claims that comparative readings too, are a restricted version of the absolute reading. The difference is that in one case the elements in the comparison set are made salient in and of themselves, while in the other they become salient by virtue of a salient function that associates salient individuals with individuals that have some degree of R-ness. This view allows us to subsume all the variation in the interpretation of superlatives, not just that inside the category of absolute readings, to the more general phenomenon of context-dependency in the interpretation of natural language quantifiers. This provides a simpler account of comparative readings, and, as we will see in the next chapter, also a more accurate one.

In contrast to the scope ambiguity approach, the saliency theory does not use any special constraints; here comparative readings are neither syntactically nor semantically special. Remember from section 2.3.2 that in order to account for the comparative reading of sentences like (32) the syntactic approach assumes that they involve a different LF, where the superlative quantifier has moved from its base position to a position that is VP adjoined. The result of this operation is that the comparison relation R is no longer determined by an adjective or N' constituent

but rather by an intransitive verb phrase denotation plus lambda abstraction (38a). This means that the type of elements in the comparison set, as well as the topic of comparison, also change. We therefore compare people rather than skyscrapers (38b) and the topic of comparison is given by the referent of the subject phrase rather than that of the superlative DP.

(38) The syntactic approach to comparative readings

R changes via covert movement of -est

a. R = λd.λx. x climbed a d-high skyscraper

b. C = λx.[$\exists$d.[R(d)(x)=1] & salient(x)], namely

C = λx.$\exists$d.[x climbed a d-high skyscraper & salient(x)]

Under the saliency theory, comparative readings have the same LF that absolute readings have (39), which means that no covert movement operation is needed and the superlative morpheme is always interpreted locally. In addition, the saliency theory can do away with the other assumption required by the syntactic approach, namely that the definite article preceding the superlative is interpreted as an indefinite whenever the superlative receives a comparative reading. In the absence of this assumption the covert movement of the superlative quantifier is blocked by the definite island constraint.

(39) The saliency theory (meaning of -est):

-Est is interpreted inside the DP on both readings.

[$_{IP}$ John climbed [$_{DP}$ the [$_{SuperlNP}$ -est high skyscraper]].

The saliency theory also differs from the semantic approach to superlatives

(section 2.3.3) where comparative readings involve a comparison set that is narrowed down by functional interpretation. The semantic approach assumes that in such cases the comparison relation R is determined by the N' constituent that the superlative takes scope over in conjunction with the predicate of the sentence and the interpretation of the focus/wh-phrase that the superlative associates with.

(40) The semantic approach to comparative readings

R changes via functional interpretation

a. R = λd.λx. x is a d-high skyscraper climbed by an indvidual in Z where Z is the set of alternatives to the focus/wh-phrase that the superlative associates with

b. C = λx.[$\exists$d.R(d)(x)=1], namely
C = λx.$\exists$d.[x is a d-high skyscraper climbed by an individual other than John]

Under the saliency theory there is no variation in the meaning of the head noun between comparative and absolute readings. Its interpretation stays the same as in other contexts where the noun is not modified by a superlative and there is no need to resort to the operation of functional interpretation.

(41) The saliency theory (interpretation of head noun):

The interpretation of the head noun stays the same on absolute and comparative readings.

The intuition behind the syntactic and semantic approaches to superlatives is that comparative readings involve a comparison set that is restricted by the frame

of the sentence in which the superlative occurs. By using a grammatical device that confers the superlative morpheme wide scope, they ensure that the predicate and its other arguments affect the interpretation of the superlative. Classic comparative readings do indeed have this property, but, as I show in section 3.2.1, there are others that do not. The saliency theory can account for both these categories. Under the saliency theory comparative readings arise when there is a salient function that establishes a correspondence between some set of salient individuals and a number of individuals that have some degree of R-ness. I assume that the content of this function is typically given by the predicate of the sentence containing the superlative since it is the most local salient relation. At other times however, the comparison set may be constrained by a predicate from a different sentence; presumably because this other relation is more relevant than the one expressed by the local predicate.

The saliency theory is closely related to the discourse approach proposed in Sharvit and Stateva 2002, and Gutierrez-Rexach 2006 (section 2.3.4), where the interpretation contrast between absolute and comparative readings is also argued to be a discourse phenomenon. For these authors, though, comparative readings are an instance of a particular type of contextual restriction, where the comparison set is constrained by the focus semantic value of the sentence. This captures an old observation that the position of focus affects the truth-conditions of the comparative reading and makes the prediction that comparative readings are possible only in the presence of focus.

(42) The discourse approach to comparative readings

C is constrained in part or entirely by $[IP]^f$

a. R = λd.λx. x is a d-high skyscraper

b. C = λx.$\exists$d.$\exists$y.[x is a d-high skyscraper climbed by y & salient(x) & salient(y)](Sharvit and Stateva 2002)

c. C = λx.$\exists$d.$\exists$y.[x is a d-high skyscraper climbed by an individual other than John] (Gutierrez-Rexach 2006)

In contrast to the discourse approach the saliency theory argues that comparative readings are not dependent on the presence or the interpretation of focus. Specifically, comparative readings can arise as a focus effect but this isn't necessarily the case. Comparative readings are also possible when there is a salient function constraining the comparison set. This option is unavailable under the discourse approach, where all comparative readings are analyzed as the result of focus constraints.

(43) The saliency theory (interpretation of focus)

Comparative readings are not necessarily the a focus effect.

As a consequence, the saliency theory can do away with the special assumption that the discourse approach needs to make in order to account for English superlatives, namely that in this language focus is only optionally marked, and it can account for cases where the comparative reading is not affected by the interpretation of a focus phrase that the superlative co-occurs with. The saliency theory also provides a better account of Hungarian where comparative readings do seem to be available even if there is no focus or interrogative wh-phrase present (see section 3.2.2).

To account for those comparative readings that are affected by the interpretation of focus I propose an analysis that builds on Rooth 1992 and where the comparison set is constrained by the focus semantic value of the sentence only in part, context being responsible for the rest. This is similar to Sharvit and Stateva's 2002 analysis presented in section 2.3.4 (see also Heim 1999), but contrasts with the one proposed by Gutierrez-Rexach 2006, where the focus semantic value of the sentence single-handedly determines the comparison set.

To summarize, under the saliency theory superlatives have a variety of interpretations which differ from each other in terms of the properties of the surrounding discourse. In other words, there is no categorial contrast between absolute and comparative readings. Rather, superlatives have a multitude of absolute readings ranging from the least restricted one, where the only property that the elements in the comparison set must satisfy is to have some degree of R-ness, to the more restricted ones, where the elements in the comparison set are selected by virtue of having some additional property P' that is contextually specified. As shown above, the restrictions imposed by context on the comparison set may take all sorts of forms. For example, P' can be specified by further noun modification or by a salient function Assoc whose content may or may not be determined by the predicate of the sentence containing the superlative. If the superlative associates with focus, then the set of elements with some degree of R-ness is narrowed down by the focus semantic value of the sentence. Other properties of the surrounding discourse may influence the comparison set. [16] In the next chapter I concentrate on showing that the saliency

[16] As suggested by Hans Kamp (personal communication), comparative readings may also be the result of a contrastive topic configuration. Utterances involving a contrastive topic usually also

theory is to be preferred to previous analyses not only conceptually – as this section has argued – but also empirically.

2.5 Summary and discussion

This chapter proposed a non-comparative approach to superlatives whereby the meaning contrast between absolute and comparative readings is due to a saliency effect. Comparative readings are argued to arise in the same way that absolute readings do, namely they too involve a comparison relation R that is determined by the adjective (and noun) constituent that the superlative morpheme takes scope over and do not depend on the presence of focus. Specifically, comparative readings are analyzed as a restricted version of the absolute reading where the comparison set is narrowed down by a saliency function that associates salient individuals with individuals that have some degree of R-ness. In other words, the meaning difference between comparative and absolute readings does not result from the way in which meanings are composed, but rather from the values of a contextual variable, which is already present in the derivation.

The use of such a variable is not particular to superlatives. Natural language

contain a focus phrase (Büring 1997, Büring 2003). Such utterances are related to two contextually given questions at the same time as shown in (1).

(1) a. Well, what about FRED? What did HE eat?

b. FRED_{CT} ate the LARGEST APPLE_{F}.

I leave the issue of how exactly the interpretation of contrastive topics affects that of superlatives to further research.

quantifiers in general, have been analyzed in this way (e.g. von Fintel 1994 and others following him), as well as other linguistic expressions and phenomena that include adjectives (e.g. Heim and Kratzer 1998, Szabo 2001), modals (e.g. Kratzer 1981), and focus (e.g. Rooth 1992). One issue that has not been discussed here, and which is not addressed in these other analyses either, is what in the context makes the free variable get the value that it gets. I have referred to this mechanism using the term saliency, indicating that the individuals picked by the free variable are somehow more prominent than others in the conversation. The notion of saliency has been used extensively in the literature on referring expressions such as pronouns, demonstratives, and (in)definite noun phrases (e.g. Chafe 1976, Prince 1981, Gundel et al. 1993, among many others) to indicate prominence of an object in relation to the knowledge and attention state of the conversation participants in a particular context, but there is very little in way of a formal account. There are numerous psycholinguistic studies, especially eye-tracking experiments (Griffin 2004 and references therein), but not many linguistic attempts to describe which features of the context are relevant for the resolution of semantic incompleteness (Stanley and Szabo 2000). One exception is Sperber and Wilson's 1986 theory of relevance but even though there is now a large literature on how Relevance can explain the way in which we fill in missing bits of meaning, it is nonetheless difficult to extract precise predictions from this very general principle. I therefore leave open the question of the exact specification for how the value of a free variable is determined by context and argue that it is a more general problem for the field of formal pragmatics.

Turning now to the empirical coverage of the saliency theory, I showed that it can account for all the classic comparative readings that comparative theories derive - where the comparison set is restricted by the predicate of the sentence and is affected by the interpretation of focus - but with a smaller set of assumptions. In addition, the saliency theory has the advantage of being both sufficiently lax and sufficiently powerful. It is lax enough to capture readings that strong comparative theories cannot derive and it is also powerful enough to account for interpretations that the weak comparative theory claims it cannot. I discuss these in the next chapter and argue that the saliency theory is empirically superior to previous analyses.

Chapter 3

Evidence for a non-comparative approach to superlatives

3.1 Motivating the saliency theory

The previous chapter argued for a saliency theory of superlatives that can provide a simpler analysis of comparative readings than previous analyses do. In this chapter I bring evidence that the saliency theory has wider empirical coverage than strong comparative theories. I also provide counterevidence to the arguments that the weak comparative theory has raised against a purely pragmatic approach based on upstairs de-dicto readings and unambiguous superlatives.

Previous theories of superlatives argue that comparative readings are essentially different from absolute readings. For instance, the scope ambiguity approach (sections 2.3.2 and 2.3.3) portrays them as having special syntactic or semantic properties, while the discourse approach (section 2.3.4) analyzes them as being

focus-dependent. The motivation for this type of comparative approach to the interpretation of superlatives comes in two forms: a strong claim and a weak claim (see also section 2.3.5). Most comparative theories (Szabolcsi 1986, Farkas and Kiss 2000, Gutierrez-Rexach 2006, Sharvit and Stateva 2002) adopt the strong claim, according to which comparative readings necessarily involve some special constraint that absolute readings do not. Their claim is based on the generalization that comparative readings need to be licensed, that is, they are only possible when the sentence containing the superlative also contains a focus element or a wh-phrase, and they predict that all comparative readings involve a comparison set that is constrained by the predicate of the sentence containing the superlative.

The comparative theory of Heim 1999 steers away from the claim that comparative readings need licensing and provides a different kind of argument for deriving comparative readings by means of a special constraint. In particular, Heim 1999 argues that there are certain types of comparative readings that can only be derived using a syntactic approach to superlatives and that a pragmatic approach where comparative readings are derived contextually cannot account for them. A similar argument has been made on the basis of unambiguous superlatives (Schwarz 2004b, 2005; Teodorescu 2007). These are superlatives that lack either an absolute or a comparative reading and whose missing reading has been argued to involve an illicit syntactic configuration. Other comparative readings and superlatives may not necessarily involve a syntactic constraint, but Szabolcsi's 1986 generalization has been taken as evidence that such an extension would be on the right track.[1]

[1]See hoewever, the discussion on the interpretion of negative superlatives in sandwich scenarios (Sharvit and Stateva 2002) and the problems that arise when analyzing the focus sensitivity of su-

According to Szabolcsi superlatives with comparative readings - but not those with absolute readings - behave like indefinites, suggesting that comparative readings form a natural class. To account for this effect, the syntactic approach to superlatives assumes that the interpretation of the definite article preceding the superlative (noun) phrase varies with the interpretation of the superlative, namely that THE is interpreted as A whenever the superlative receives a comparative reading.

Below I provide various types of evidence that the saliency theory is to be preferred to previous theories of superlatives. The argument is structured as follows. First, I show that the saliency theory has broader coverage than strong comparative theories since in addition to the classic comparative readings discussed in section 2.4.2 there also some comparative readings that strong comparative theories cannot account for, but which are unproblematic for the saliency theory. In section 3.2.1, I argue that not all comparative readings are restricted by the predicate of the sentence. This is unexpected under comparative theories since the mechanism that they use to derive comparative readings entails that the comparison set is always restricted by the meaning of the predicate. This is not so under the saliency theory, where the content of the association function is contextually determined. In section 3.2.2, I argue that the licensing requirement that strong comparative theories adopt runs into both conceptual and empirical problems. These problems are avoided under the saliency theory where comparative readings are not necessarily affected by the interpretation of focus or wh-phrases. Section 3.2.3 shows that unlike what the scope ambiguity approach predicts, comparative readings can arise even when

perlatives syntactically (Heim 1999). Both of these phenomena suggest that extending the syntactic analysis to all comparative readings is actually rather problematic.

locality constraints are disobeyed. Under the saliency theory where comparative readings are derived pragmatically, this is not at all surprising. I therefore suggest that these three types of comparative readings rule out the strong claim for comparative theories.

This leaves us with the question of how the saliency theory compares with a weak comparative theory where some comparative readings and superlatives are derived pragmatically while others are derived syntactically. In sections 3.3 and 3.4, I re-evaluate the empirical claims that the weak comparative theory relies on and deconstruct the arguments that have been made against a purely pragmatic approach. Specifically, I show in section 3.3 that the *upstairs de-dicto* reading, which is a type of comparative reading that appears in intensional environments and which Heim 1999 argued to require a syntactic analysis, is not specific to superlatives. I maintain that it is part of a more general phenomenon pertaining to the interpretation of noun phrases in intensional environments and therefore, it is not an appropriate tool for distinguishing among theories of superlatives. In section 3.4 I discuss the intepretation of unambiguous superlatives and show that the syntactic analyses that have been proposed for why so-called amount superlatives lack absolute readings run into both conceptual and empirical problems.

3.2 Comparative theories undergenerate

This section presents evidence that strong comparative theories - be they scope ambiguity analyses (Szabolcsi 1986, Farkas and Kiss 2000), or discourse analyses (Sharvit and Stateva 2002, Gutierrez-Rexach 2006) - undergenerate. I introduce

three new types of comparative readings and argue that, unlike strong comparative theories, the saliency theory of superlatives is much more versatile and can account for all of them.

3.2.1 The predicate doesn't always restrict the comparison set

Each of the three strong comparative theories - the syntactic and the semantic scope ambiguity analyses, as well as the discourse approach - predict that comparative readings always involve a comparison set that is restricted by the predicate of the sentence. In this section I explain why they make this prediction and then provide evidence that, in fact, this restriction doesn't always apply. Finally, I show that the saliency theory can easily generate the unexpected examples.

To account for the meaning contrast between absolute and comparative readings, the syntactic scope ambiguity analysis (section 2.3.2) varies the relation R that forms the basis of comparison. Normally, the relation R is given by the N' constituent that the superlative scopes over, but the syntactic scope ambiguity analysis proposes that comparative readings are different. Specifically, comparative readings are argued to correspond to a syntactic configuration where the superlative operator has moved covertly and scopes over the verb phrase (section 2.3.2). As a consequence, the comparison relation R is no longer given by the denotation of an N' constituent, but rather by the denotation of the VP. Since the presuppositional content of superlatives requires all members of the comparison set to have some degree of R-ness (section 2.2.2), this means that on comparative readings the comparison set is always restricted by the predicate of the sentence.

The other two strong comparative theories resort to a different strategy, which is to use an additional constraint on the comparison set. The semantic scope ambiguity analysis claims that on comparative readings the head noun receives a functional interpretation, whereby its denotation is restricted by the predicate of the sentence in conjunction with the interpretation of the focus/wh-phrase that the superlative associates with (section 2.3.3). The discourse approach proposes that on comparative readings the comparison set is constrained either in part or entirely by the focus semantic value of the sentence (section 2.3.4). The effect of this constraint is that the (contextually relevant) elements in the comparison set must satisfy the property given by the predicate of the sentence in which the superlative occurs.

This discussion suggests that abstracting away from the particular details of how strong comparative theories derive the comparative reading, they all end up using the predicate of the sentence to restrict the comparison set.

(44) John climbed the highest mountains.

(45) a. *Szabolcsi 1986*:

John climbed a mountain higher than anyone else climbed.

b. *Farkas and Kiss 2000, Gutierrez 2006*:

John climbed a mountain higher than any of the mountains climbed by other people.

c. *Sharvit and Stateva 2002*:

John climbed a mountain higher than any of the salient mountains climbed by salient individuals

Farkas and Kiss 2000 have explicitly argued for this type of constraint based

on a comparison between dependent absolute readings and comparative readings. In both cases the interpretation of the superlative morpheme needs to make reference to a function that pairs elements in a set X to sets of elements that have some degree of R-ness. They claim however, that only in the case of dependent absolute readings is this function provided contextually. In the case of comparative readings it is necessarily determined by the predicate of the sentence containing the superlative.

To illustrate this, let us first consider the example in (46), where a definite noun phrase appears in the scope of a universal.

(46) Every child ate the cookie first.

When used in a context where every child was given a lunch box containing a sandwich and a cookie, the definite noun phrase *the cookie* receives a dependent reading on which its referent is understood as co-varying with the child. If the context does not provide such an association, the dependent reading is absent. Similarly, the superlative in (47), which is just another example of a definite noun phrase, can also receive a dependent reading if the context is appropriate.

(47) Every student climbed the highest mountain.

When (47) is uttered in a context where each element of the set of students is associated with some set of mountains, it receives the dependent reading shown in (48). According to this reading, the interpretation of the superlative co-varies with the interpretation of the variable bound by the universal, that is, the referent of *the highest mountain* varies with the referent for the noun phrase *student*.

(48) Dependent absolute reading:

For every student x, x climbed the mountain that was highest among the mountains associated with x.

When no pairing between students and sets of mountains is contextually salient, example (47) is interpreted as in (49). On this reading, the superlative picks out the mountain that ranks highest in a contextually salient set of mountains and the predicate of the sentence then relates it to the universally quantified subject phrase. This suggests that superlatives can receive a dependent absolute reading only as long as the context provides the required association.

(49) Regular absolute reading:

There is a mountain such that it ranks highest among all salient mountains and every student climbed it.

Comparative readings are similar to dependent readings in that they too involve the pairing of individuals in some set X with sets of entities. Farkas and Kiss 2000 argue that this pairing cannot, however, be contextually determined as in the case of dependent absolute readings. They base their claim on the following minimal pair. Given a context where there is a salient function *photograph* that associates individuals in X with sets of mountains (50), the superlative sentence in (51) can receive a dependent absolute reading where the comparison set is narrowed down to mountains photographed (52).

(50) Context:

Every individual x in a relevant set X has photographed some set of mountains.

(51) Everyone climbed the highest mountain.

(52) Dependent absolute reading

For every individual x in X, x climbed a mountain higher than any of the mountains x photographed.

In contrast, they propose that when the sentence in (53) is used in the same context, the superlative morpheme cannot make reference to this salient association and the range of elements in the comparison set can only be narrowed by the predicate of the sentence. In other words, only the comparative reading in (54b) is possible; the one in (54a) is not.

(53) John climbed the highest mountain.

(54) Comparative reading

a. # John climbed the highest mountain among the mountains photographed.

b. John climbed the highest mountain among the mountains climbed.

When Farkas and Kiss 2000 make this claim they do not however, provide any actual context. Once we do that we see that comparative readings too, can be affected by a predicate other than the one in the sentence containing the superlative. If the superlative sentence in (55b) is uttered as a continuation to (55a) it can receive either of the two interpretations in (56), where the comparison set is constrained by the non-local predicate *photographed*.

(55) a. Everyone photographed mountain lions over Spring break.

b. John took a gun and shot the fiercest lion.

(56) Comparative reading

John shot the fiercest lion among the lions anyone/he photographed.

Such comparative readings remain unexplained under strong comparative theories where all comparative readings are constrained by the predicate whose argument is the superlative noun phrase. The saliency theory is much more flexible since the content of the Assoc function that gives rise to comparative readings does not need to be determined by the local predicate (see section 2.4). As such, comparative readings like (56) are not at all surprising.

(57) *The saliency theory*:

John shot the fiercest lion among the lions associated with salient individuals.

3.2.2 Comparative readings do not need licensing

Based on evidence from Hungarian and/or English, supporters of strong comparative theories argue that comparative readings require some sort of licensing, that is, that they are only possible in certain contexts. Specifically, they claim that comparative readings are contingent on the presence and interpretation of focus/wh-phrases. Below I introduce these data and the generalizations that have been proposed and argue, contra strong comparative theories, that there is no licensing requirement and that comparative readings are not necessarily grammatically constrained by the in-

terpretation of focus or of wh-phrases. Strong comparative theories cannot account for such comparative readings, but the saliency theory can.

Szabolcsi 1986, followed by Farkas and Kiss 2000, note that the Hungarian sentences in (58) and (59), where the superlative phrase associates with a focus or an interrogative wh-phrase, have both an absolute and a comparative reading.[2]. Note that in this language the presence/absence of a focused constituent is syntactically marked by word order.

(58) Association with focus (both readings)

[Janos]$_F$ maszta [$_{VP}$ meg a legmagasabb hegy-et].
John climbed PERF *the highest mountain*

"It was John who climbed a higher mountain than any other mountain."

"It was John who climbed a higher mountain than anyone else climbed."

(59) Association with interrogative WH (both readings)

[Ki]$_{WH}$ maszta meg a legmagasabb hegy-et
who climbed PERF *the highest mountain*

[2]Sometimes the superlative's association with an interrogative wh-phrase is not sufficient for the comparative reading to be available. *Why* and *when* questions cannot license the comparative reading in the absence of a focused constituent (Szabolcsi 1986, Farkas and Kiss 2000)

(1) Lexical exceptions

Miert maszta meg Janos a legmagasabb hegyet?
why climbed PERF *John the highest mountain*

"Why did John climb the highest mountain?" (Szabolcsi)

"Who climbed a higher mountain than any other mountain?"

"Who climbed a higher mountain than anyone else climbed?"

In contrast, they argue that sentences with a superlative but no focus or wh-item cannot have a comparative reading. Example (60a) is claimed to be unambiguously interpreted with an absolute reading. Example (60b), where the superlative lacks an absolute reading, is marked as ungrammatical.

(60) No association with focus or WH (absolute only)

a. Janos [$_{VP}$ meg-maszta a legmagasabb hegy-et].
John PERF-*climbed the highest* *mountain*
"John climbed a higher mountain than any other mountain."
"John climbed a higher mountain than anyone else climbed."

b. * Janos (meg) itta a legkevesebb bort
Janos PERF *drank the least* *wine*
"Janos drank less wine than anyone else."

The licensing requirement for comparative readings in Hungarian can be summarized as in (61).

(61) *Licensing comparative readings in Hungarian*:
When the superlative does not co-occur with a focus or wh-phrase, comparative readings are absent and amount superlatives are ungrammatical.

In English the situation appears to be somewhat different since comparative readings are also possible in the absence of a focus or interrogative wh-phrase. The sentences in (62) and (63), where the superlative co-occurs with a prosodically

marked focus phrase or an interrogative phrase, have both an absolute and a comparative reading. In addition, so do sentences with flat intonation and no interrogative wh, such as our original sentence in (14), repeated below as (64).

(62) Association with focus (both readings)
[John]$_F$ climbed the highest mountain.

(63) Association with interrogative WH (both readings)
Who climbed the highest skyscraper?

(64) No interrogative WH and no apparent association with focus (both readings)
John climbed the highest skyscraper.

A common assumption that strong comparative theories make is that in English focus is actually only optionally marked prosodically. Contrary to first impression, English and Hungarian are therefore quite similar since in both languages comparative readings are restricted to cases where the superlative associates with a focus or an interrogative wh-phrase. The only difference between the two languages is the marking of focus. In Hungarian the presence of a focus phrase is signalled by word order, while in English it is typically, but not obligatorily, marked by prosody. The licensing requirement for comparative readings in English is therefore expressed as in (65).

(65) *Licensing comparative readings in English:*
All comparative readings are the result of superlatives associating with a focus/wh-phrase. Focus is only optionally marked.

Unlike strong comparative theories, I argue in what follows that there is no licensing requirement, neither in Hungarian nor in English. I do this in two ways. First, I present evidence that there is no distributional constraint according to which comparative readings are available only when the superlative co-occurs with a focus or wh-phrase. Secondly, I provide evidence that comparative readings do not depend on the interpretation of focus or wh-phrases.

According to Szabolcsi 1986, as well as Farkas and Kiss 2000, superlatives cannot have a comparative reading unless there is also a focus or wh-phrase present in the sentence. Amount superlatives, which lack absolute readings, are claimed to simply become ungrammatical in such environments (Farkas and Kiss 2000). The example in (66) shows that neither of these claims holds if there is sufficient context provided. The sentence in (66b), contains a superlative but no a wh-phrase or a focus phrase - as the position of the perfective marker indicates. However, when uttered as a continuation to (66a), it is perfectly grammatical and is understood with a comparative reading, which compares John to his brothers (67).

(66) a. Janos is very different from his brothers. On vacation last week...

b. Janos meg itta a legtobb sort es meg maszta a
Janos PERF *drank the most beer and* PERF *climbed the*
legmagasabb hegy-et.
highest mountain
"Janos drank the most beer and climbed the highest mountain."

(67) *Comparative reading*:

John drank more beer than his brothers and climbed a higher mountain than they did.

Invalidating the licensing requirement for English is somewhat trickier since strong comparative theories assume that in this language focus is only optionally marked by prosody. I propose that we need to abandon this assumption since it is conceptually problematic in several respects. One issue is that it makes it basically impossible to define an elsewhere case for English (65), as we did for Hungarian (61), since it is not clear how one would test for the presence/absence of focus when focus is not prosodically marked but the comparative reading is present. This suggests that the licensing requirement in (65) is not a testable condition, and it therefore looks more like a theoretical construct than an empirical generalization.[3]

The other issue is that this assumption generates some curious patterns in connection to the focus sensitivity of superlatives. Strong comparative theories interpret the requirement in (65) to show that, in the absence of a wh-phrase, comparative readings are necessarily the product of licensing by focus. Each of them has a different way of implementing this (cf. discussion in sections 2.3.4 and 3.2.3), but what is relevant is that in all cases focus (supposedly) constrains the comparison set. This accounts for why the position of the focus phrase affects the type of comparative reading a sentence can receive[4], but also has some unwelcome results.

Let us first consider examples (68a) and (68b), in which the superlative associates with a prosodically marked focus phrase. Both sentences have an absolute

[3]In addition, it implies that the association of superlatives with focus is obligatory, unless the superlative associates with a relative wh-phrase, or the superlative morpheme itself is focused, or the comparative reading is absent, which is a rather weird generalization.

[4]This is an old observation in the literature on superlatives that goes back to at least Jackendoff 1972.

and a comparative reading. The absolute reading is the same and is given in (69a), but the comparative reading differs. Sentence (68a) has the comparative reading in (69b), and sentence (68b) has the comparative reading in (69c). This interpretation contrast suggests that comparative readings have different truth conditions depending on the position of focus, which is exactly what strong comparative theories predict.

(68) a. [Sarah]$_F$ gave Levin the largest cupcake.

b. Sarah gave [Levin]$_F$ the largest cupcake.

(69) a. *Absolute reading*:
Sarah gave Levin the largest cupcake.

b. *Comparative reading for (68a)*:
Sarah gave Levin a larger cupcake than anyone else gave him.

c. *Comparative reading for (68b)*:
Sarah gave Levin a larger cupcake than she gave anyone else.

In other cases however, the requirement that (in the absence of a wh-phrase) comparative readings are necessarily dependent on the interpretation of focus has unwelcome results. One of them is that it generates some curious patterns in cases where focus is not prosodically marked. Strong comparative theories that rely on (65) have to say that the sentences in (62) and (64) have the same comparative reading because in both cases the focus is on *John*, but in (64) this is not prosodically marked. Transitive and ditransitive sentences with neutral intonation and no wh-phrase appear to behave differently however, and there is no obvious explanation as

to why this would be so. As Szabolcsi 1986 notes, the sentence in (70a) below, has the same comparative reading as that in (70b), where the object *Bill* is prosodically marked as being focused. This comparative reading is different from the one in (70c), where the subject phrase *John* is instead prosodically marked as focused.

(70) a. John showed the highest mountain to Bill.
(John showed Bill a higher mountain than he showed anyone else.)

b. John showed the highest mountain to [Bill]$_F$.
(John showed Bill a higher mountain than he showed anyone else.)

c. [John]$_F$ showed the highest mountain to Bill.
(John showed Bill a higher mountain than anyone else showed him.)

The reason why a transitive sentence with neutral intonation and no wh-phrase, like the one in (62), has a comparative reading that suggests a focused subject, while the similar di-transitive sentence in (70a) has a comparative reading that suggests a focused object is mysterious.[5]

Another unwelcome result is that strong comparative theories do not account for comparative readings that arise in the presence of a prosodically marked focus phrase, but where the comparison set is not constrained by focus. Heim 1999 mentions the following dialogue, where the question in (71) is answered with the sentence in (72). The answer contains a superlative and a prosodically marked focus phrase, *plant*.

(71) How does one win this contest?

[5]Szabolcsi 1986:249 suggests that this might be due to the fact that "one ought to make a prosodic effort to get Focus on the subject", but this seems rather ad-hoc.

(72) By putting the tallest [plant]$_F$ on the table.

If the context makes salient a set of plants put by somebody on the table sentence (72) can have the comparative reading in (73), where the comparison set is not affected by the interpretation of the focus phrase.

(73) *Comparative reading*:

By putting a taller plant on the table than any of the plants put by other contestants.

Strong comparative readings – where, in the absence of a wh-phrase, all comparative readings depend on the interpretation of focus – can not account for this reading.

To summarize our discussion so far, I argued contra strong comparative theories that comparative readings do not require licensing, that is, they do not depend on the presence or interpretation of focus/wh-phrases. I re-evaluated the data that these previous theories present and showed that in Hungarian comparative readings are actually possible even in the absence of a licensing element. In the case of English I proposed that we need to abandon the assumption that focus is only optionally marked because this is conceptually flawed. I also provided evidence that, unlike what strong comparative theories predict, comparative readings are not dependent on the interpretation of focus even when the superlative co-occurs with a prosodically marked focus phrase.

Since under the saliency theory there is no licensing requirement, the comparative readings in (67) and (73) are not that surprising. The context provides a salient association function, which in turn restricts the comparison set as discussed

in section 2.4. Under strong comparative theories these comparative readings are left unexplained.

3.2.3 Comparative readings can disobey locality constraints

The strong comparative theory of Szabolcsi 1986 argues that all comparative readings are derived syntactically. Her claim is based on the fact that comparative readings need to be licensed and that the class of licensors, which includes focus phrases, interrogative wh-phrases, and relative wh-phrases, can only be described uniformly in syntactic terms. The previous section provided empirical arguments against the licensing requirement showing that it is actually too restrictive. Here I would like to discuss another prediction that this theory makes, namely the locality constraints on the availability of comparative readings.

Remember from section 2.3.2 that the syntactic approach to superlatives derives comparative readings by means of movement. According to Szabolcsi, comparative readings are possible only when the superlative morpheme moves out of the superlative noun phrase and takes scope over a licensing variable, that is, a variable associated with one of the licensing operators.[6] The movement of -est is at least as high as the VP immediately containing the superlative.[7] To illustrate let us consider the sentence in (74a). Abstracting away from the licensing requirement, its

[6] In the transformational grammar literature, focus, interrogative-wh, and relative-wh phrases are all syntactic operators. When they move out of their base position they leave behind a trace, which is interpreted as a variable.

[7] Szabolcsi actually assumes that the superlative morpheme attaches at the IP rather than the VP level, but see Heim 1999 for a semantic argument that the landing site needs to be an intransitive VP.

comparative reading (74b) corresponds to the LF in (74c).

(74) Comparative readings and covert movement

a. Mary got the fastest car.

b. "Mary got a faster car than anyone else".

c. LF: Mary -est [$_{VP}$ got [$_{SuperlDP}$ A t_i fast car.]]

If the superlative adjective appears in an embedded clause as in (75), -est can even take scope over the matrix VP. The question in (75) can have two comparative readings: a regular one which involves a comparison set that is restricted by the embedded VP (75a), and an extra-wide comparative reading where the comparison set is restricted by the matrix VP (75b).[8]

(75) Who expected [Mary to get the fewest letters?]

a. Wide scope of -est

"Who expected Mary to get fewer letters than anybody else got?"

b. Extra wide scope of -est

"Who expected Mary to get fewer letters than anybody else expected her to get?"

Since covert movement is in principle subject to the same restrictions that overt movement is, we can test the syntactic approach to superlatives with an island configuration. Islands are a hallmark diagnostic for testing movement, so we would

[8] According to Szabolcsi there appear to be some restrictions that block the extra-wide scope of -est out of finite clauses, but not out of subjunctive or infinitival clauses.

expect that a superlative embedded inside a relative clause cannot have a comparative reading where the superlative morpheme takes extra-wide scope as that would be an island violation.

Consider for instance the examples in (76). Contrary to what the strong version of the syntactic theory predicts, the extra wide scope reading is available. The sentence in (76a) can have a reading where the man that John met is compared to men met by other people. The sentence in (76b) can too, have a comparative reading where the comparison set is restricted by the matrix predicate.

(76) Islands and extra wide scope of -est

a. John met the man [who had the fastest car.]

   "John met a man who had a faster car than any of the cars owned by men that friends of John met."

b. John met the man [who drove fastest].

   "John met a man who drove faster than any of the men that friends of John met."

These examples, in conjunction with those presented in the previous two sections, suggest that any syntactic approach to superlatives that adopts the strong claim and derives all comparative readings by movement of -est will undergenerate. This does not rule out the syntactic approach to superlatives completely, but forces us to retreat to a weak syntactic comparative theory where only some comparative readings are derived syntactically, while others are pragmatic in nature. Evidence for this type of weak syntactic theory comes from a set of comparative readings and superlatives that have been argued to require a syntactic analysis. I discuss these in

the next two sections.

3.3 Comparative readings claimed to require a syntactic analysis

The previous section has shown that we need the saliency theory in order to account for a number of comparative readings that strong comparative theories cannot generate. Since the saliency theory can also derive all the classic comparative readings that these theories derive, it seems that we can do away with the comparative approach altogether. However, it has been argued that this cannot be the case because there are certain comparative readings (Heim 1999) and certain superlatives (Schwarz 2004b, 2005; Teodorescu 2007) which require a syntactic analysis. The strongest argument for a weak comparative theory of this sort, where some comparative readings are derived pragmatically while others are derived syntactically, comes from the upstairs de-dicto reading. This is a reading that becomes available when superlatives are embedded in intensional contexts. I discuss this reading below and show that it does not constitute an argument against the saliency theory.

When superlatives appear in intensional contexts they can have several types of readings. To illustrate, let us consider (77), where the superlative DP *the highest mountain* is embedded under the intensional verb *want*.

(77) John wants to climb the highest mountain.

Example (77) has four regular readings: two de-re readings (78) and two de-dicto

comparative readings (79). Within each of these categories there is a further distinction between absolute and comparative readings, as shown below.

(78) DE-RE (the superlative DP outscopes *want*)

a. De-re absolute:

compares the height of the relevant actual mountains.

b. De-re comparative:

compares the height of actual mountains climbed by the relevant climbers in their wish-worlds, i.e., John is the most ambitious climber among all.

(79) DE-DICTO (the superlative DP is interpreted in the scope of *want*)

a. De-dicto absolute:

compares the height of the relevant non-actual mountains, i.e., in all of his wish-worlds, John climbs some non-actual mountain which is higher than any other non-actual mountains.

b. De-dicto comparative:

compares the height of non-actual mountains climbed by the relevant climbers in their wish-worlds, i.e., John is the best (non-actual) climber.

These readings can be derived either syntactically or pragmatically, so they are not a decisive factor in choosing between the weak syntactic theory and the saliency theory. Under the syntactic approach each of the four readings has its own LF, as shown in (80).

(80) Syntactic analysis

a. *De-dicto absolute*:

   John$_1$ wants t$_1$ to climb [the EST$_C$ λd d-highest mountain].

b. *De-dicto comparative*:

   John$_1$ wants t$_1$ [EST$_C$ λd to climb the d-highest mountain].

c. *De-re absolute*:

   John$_1$ [the EST$_C$ λd d-highest mountain] λ_2 wants t$_1$ to climb t$_2$

d. *De-re comparative*:

   John$_1$ EST$_C$ λ_1 [the λd d-highest mountain] λ_2 wants t$_1$ to climb t$_2$

   (LFs from von Stechow 2008)

Under the pragmatic analysis, there are only two LFs, which correspond to the de-re/de-dicto ambiguity. The absolute/comparative contrast is the result of contextual variation.

(81) Pragmatic analysis

a. *De-dicto absolute/comparative*:

   John$_1$ wants t$_1$ to climb the EST$_C$ λd d-highest mountain.

   (the comparison set is relativized to worlds)

b. *De-re absolute/comparative*:

   John$_1$ [the EST$_C$ λd d-highest mountain] λ_2 wants t$_1$ to climb t$_2$

Heim 1999 notes that, in addition to these four regular de-re and de-dicto readings, there is also a fifth reading, which Sharvit and Stateva (2002) label *upstairs de-dicto*. The upstairs de-dicto reading becomes salient in scenarios like the following. Suppose that someone conducts a survey asking the question: *How high*

a mountain do you want to climb? and the respondents John, Bill, and Mary answer as in (82).

(82)
John: I want to climb a mountain that is 6000m high.
Bill: I want to climb a mountain that is 5000m high.
Mary: I want to climb a mountain that is 3000m high.

The results of the survey can be reported by uttering *John wants to climb the highest mountain.* Since in this context no one wants to climb a particular mountain, this eliminates the absolute and comparative de-re readings from the range of possible interpretations. If no one cares about the height of the mountain to be climbed relative to other mountains, the absolute de-dicto reading is also ruled out. Finally, suppose that no one cares how high a mountain anyone else will climb. This excludes the possibility of having a comparative de-dicto reading. The interpretation that we are left with is the split-de-dicto reading, which according to the syntactic analysis compares wishes rather than mountains or mountain climbers.

Heim 1999 suggests that upstairs de-dicto readings such as this one are extremely difficult to derive if comparative readings are just a matter of contextual variation. She proposes two possible contextual restrictions and then argues that neither of them is actually able to derive the upstairs de-dicto reading (see also discussion in Sharvit and Stateva 2000). (83) would not give us the right meaning because any world where John climbs a 6000m mountain is a world which meets his wishes. But (83) excludes some of these worlds - worlds where he climbs a 6000m mountain and other members in the comparison set are higher mountains.

(83) John wants$_0$ [1 [PRO to climb$_w$1 [(the) [est$_C$ [high mountain$_w$1]]]]]

C = all the mountains that either John, Bill or Mary climbed in all the worlds compatible with their wishes

Relativizing the comparison set to worlds, as implied by (84), would not help either. If we require that in each of John's wish-worlds, he climbs a mountain higher than Mary or Bill climb, we obtain the comparative de dicto reading. But for the upstairs de-dicto reading it does not matter whether in his wish-worlds, John's mountain is higher or lower than the mountains climbed by the others.

(84) John wants$_0$ [1 [PRO to climb-w1[(the) [est-f$_1$ [high mountain-w1]]]]]

Another option is to have the function f collect, in each of the worlds compatible with John's wishes, mountains that are of exactly the lowest degree possible for each individual in the set {John, Bill, Mary}. This doesn't work either, because the survey only indicates the lower limit of everybody's wishes. So among the worlds compatible with John's wishes there are bound to be worlds where he climbs mountains higher than 6000m.

Heim concludes that upstairs de-dicto readings cannot be derived pragmatically, at least not given standard assumptions about the interpretation of noun phrases in intensional contexts, and argues that the availability of upstairs de-dicto readings is therefore a persuasive argument for a syntactic analysis of superlatives. The syntactic analysis can easily derive the upstairs de-dicto reading with the LF in (85).

(85) John EST_C 1 [wishes to climb [A [t$_1$ high mountain]]].

Under this approach the interpretation contrast among the three types of de-dicto

readings - absolute, comparative, and upstairs de-dicto - is the effect of covert movement. When the superlative morpheme stays inside the superlative noun phrase we get the absolute reading (80a). When it moves out and takes scope over the embedded verb as in (80b) we get the regular comparative reading. Finally, when the superlative takes scope over the matrix verb as in (85) we get the special upstairs de-dicto reading. This extra-wide scope is not specific to intensional contexts as example (75) in section 3.2.3 showed.

Unlike Heim 1999, Sharvit and Stateva 2002 argue that upstairs de-dicto readings can actually be derived pragmatically and that thus there is no need for the superlative operator to move. They suggest that the superlative DP *the highest mountain* is interpreted as an individual in the regular de-re and de-dicto readings, but as a property in the upstairs de-dicto reading. The idea is to get *John wants to climb a mountain that is 6000m high* and *John wants to climb the highest mountain* to mean the same thing. For this analysis to work they need to assume that on comparative readings the comparison set is always constrained by focus. We have seen however, in section 3.2.2 that such an assumption makes incorrect predictions.

Does this mean that upstairs de-dicto readings are indeed an argument against the purely pragmatic approach to superlatives advocated under the saliency theory? I argue that the answer is negative. First, the syntactic analysis claims that the superlative quantifier can take wide scope. This is not out of the ordinary if we think of individual quantifiers, which can often do so. There is however, a debate on whether degree quantifiers do indeed resemble their individual counterparts this way (cf. Kennedy 1997; Heim 2000; Schwarzschild and Wilkinson 2002; and many

others)[9], and - independently of the presence of comparative readings - the superlative quantifier stands out as having very limited scopal properties (Stateva 2002).

Secondly, and more importantly, the argument for a syntactic analysis and against a pragmatic account is based on the idea that upstairs de-dicto readings are a phenomenon that pertains to the semantics of superlatives. However, regular noun phrases that are not modified by a superlative can also have an interpretation like the upstairs de-dicto reading. Consider for instance example (86).

(86) Fred wants to eat a red tomato.

This sentence can be used to describe a situation in which Fred is blind and all he wants to eat is a juicy tomato. This means that there is no particular tomato that Fred wants to eat, which rules out the de-re reading, and that he does not care about the tomato being red or not, which rules out the de-dicto reading. All Fred cares is for the tomato to be tasty. This interpretation is very much like the upstairs de-dicto reading of (77) where John doesn't want to climb any particular mountain and he does not care about the height of the mountain with respect to other mountains. All John wants is that he climb a mountain that has the property of being 6000m high. This suggests that the upstairs de-dicto interpretation is not specific to superlatives and therefore that it is not an effect that needs to be built into the semantics of the superlative.[10]

[9]Note also that in contrast to QR whose landing site is an IP-adjoined position, the landing site of the superlative quantifier is VP-adjoined.

[10]See Schwager 2009 for an analysis of this type of interpretation.

3.4 Amount superlatives

The discussion about the interpretation of superlatives has so far revolved around ordinary superlatives like *highest* and *most beautiful*, which have both absolute and comparative readings. In this section I focus on a different type of superlatives, namely amount superlatives like *most*, whose interpretation is restricted to comparative readings (Gawron 1995, Szabolcsi 1986, Farkas and Kiss 2000). Such superlatives have been claimed to require a syntactic analysis where absolute readings are ruled out because they correspond to an illicit syntactic configuration (Schwarz 2004b, 2004a; Teodorescu 2007). As such, amount superlatives provide an argument in favor of a weak comparative theory and against the saliency theory of superlatives. Below I evaluate the syntactic analyses that have been proposed for amount superlatives and show that they run into conceptual and empirical problems. This removes the argument against the saliency theory. Since the syntactic analyses of amount superlatives are based on data from both English and Romanian I discuss the two languages in parallel.

The discussion is organized as follows. In section 3.4.1 I provide a morphological definition of amount superlatives and show that unlike ordinary superlatives they have a limited range of interpretations and a restricted distribution. At first sight, the fact that the interpretation contrast correlates with a syntactic contrast seems to welcome a syntactic approach to the behavior of amount superlatives. In sections 3.4.2 and 3.4.3 I discuss two such analyses and point out that they are both problematic. In the course of the discussion we'll see that the distribution pattern of amount superlatives in English and Romanian is more similar than the

data in section 3.4.1 lets on and that it actually calls for a non-syntactic analysis. Under the saliency theory the interpretation contrast between amount and ordinary superlatives follows from the fact that the former convey comparison of cardinalities/amounts, while the latter encode comparison of properties.

3.4.1 Amount superlatives in English and Romanian

This section introduces the morphological, semantic, and word order properties of amount superlatives in English and Romanian, and how they contrast with those of ordinary superlatives.

Many languages make a morphological distinction between two classes of superlatives: ordinary versus amount superlatives. Ordinary superlatives consist of a gradable adjective or adverb plus the corresponding superlative morphology. In English the corresponding superlative morphology comes in synthetic and analytic varieties depending on the length of the gradable adjective or adverb (87-88). In Romanian there is no variation of this sort and the superlative morphology is always analytic, as shown in (89). For ease of reference, the superlatives appear between square brackets.

(87) English ordinary superlatives (synthetic)

a. John saw the [highest] building.

b. John ran the [fastest].

(88) English ordinary superlatives (analytic)

a. John married the [most beautiful] girl.

b. That is the [least important] of the problem.

(89) Romanian ordinary superlatives

a. Anca a urcat [cea mai înaltă] culme.
Anca PAST.3s climbed EST.*f.s* ER *tall.f.s peak.f.s*
"Anca climbed the highest peak."

b. Anca a urcat [cea mai puţin înaltă] culme.
Anca PAST.3s climbed EST.*f.s* ER *little.*INVAR *tall.f.s peak.f.s*
"Anca climbed the least high peak."

In contrast to ordinary superlatives, amount superlatives are a closed class.[11] They are the superlative form of a small number of amount items. In English these items are *much*, *many*, *little*, or *few* (90).[12] In Romanian there are only two amount items *mult*, "many/much" and *puţin*, "few/little"; they inflect for plural when the modified noun is count (cf. (91a,b) vs. (91c,d)). Note that in English the amount superlatives *most* and *least* are identical in form to the analytic superlative markers in (88), but differ from the latter in that they combine with the noun rather than the adjective.[13]

[11]I use the term amount superlatives rather than quantity superlatives, as I did in previous work, in order to maintain a uniform terminology for superlatives and relative clauses that rely on amount/quantity morphology.

[12]Bresnan 1973 argues that *many* and *much* share the same comparative and superlative forms, which are *more* and *most* respectively.

[13]The Cambridge English Grammar (Huddleston et al. 2002) describes amount superlatives as having mixed adjectival and determiner properties and classifies the analytic superlative markers *most* and *least* as adverbs. In Romanian this type of categorization is evident from the agreement pattern since adjectives and determiners bear agreement markers, while adverbs don't. When the amount item *puţin* appears in an amount superlative it inflects for gender and number (cf. 91b and

(90) English amount superlatives

a. Dan saw the [most] countries.

b. Cingular has the [fewest] dropped calls.

c. Czechs drink the [most] beer per capita in the world.

d. The pretzels have the [least] fat.

(91) Romanian amount superlatives

a. Dan a băut [cea mai multă] bere.
Dan Aux.Past.3s drunk EST.*f.s* ER *much.f.s beer.f.s*
"Dan drank the most beer."

b. Masina mea a consumat [cea mai puţină] benzină.
car-the my Aux.Past.3s consumed EST.*f.s* ER *little.f.s fuel.f.s*
"My car used the least amount of fuel."

c. Ionuţ a intervievat [cele mai multe] fete.
Ionuţ Aux.Past.3s interviewed EST.*f.p* ER *many.f.p girl.f.p*
"Ionuţ interviewed the most girls."

d. Florin a citit [cele mai puţine] romane.
Florin Aux.Past.3s read EST.*f.p* ER *few.f.p novels.f.p*
"Florin read the fewest novels."

This morphological distinction between the two classes of superlatives correlates with a semantic distinction. Unlike ordinary superlatives, which typically have multiple interpretations, amount superlatives have a much more limited range of meanings. We have seen in chapter 2 that English ordinary superlatives can have

91b) but when it appears as an analytic marker in ordinary superlatives it doesn't (89b). There is a question of whether amount items are somehow related to their homophones in ordinary superlatives, but I will not address it here.

both so-called absolute and comparative readings. In Romanian too, ordinary superlatives can have both of these interpretations. For example, depending on the utterance context, the superlative sentence in (89a) can be understood either as in (92a) or as in (92a).

(92) Interpretation of ordinary superlatives

a. *Absolute reading*:

Anca climbed a peak higher than any other peak.

b. *Comparative reading*:

Anca climbed a peak higher than (the peaks) anyone else climbed.

In contrast, amount superlatives have been argued to be systematically unambiguous: they can have a comparative reading but not an absolute reading (cf. Gawron 1995 for English, and Szabolcsi 1986 and Farkas and Kiss 2000 for English and Hungarian). That is to say that the English superlatives in (90) can only be interpreted as in (93). The same is true of their Romanian counterparts in (91).

(93) Interpretation of amount superlatives

Comparative reading only

a. Dan saw more countries than anyone else.

b. Czechs drink more beer per capita than anyone else in the world.

c. Cingular has fewer dropped calls than any other company.

d. The pretzels have less fat than any other snack.

In addition, Romanian amount superlatives differ from ordinary ones not only morphologically and semantically - as their English counterparts do - but also

in terms of their word order properties. Unlike adjectives or ordinary superlatives, amount superlatives are ungrammatical in post-nominal position. The examples in (94) show that in Romanian adjectives can either precede or follow the noun and that the post-nominal position is the unmarked one.[14] If the adjective occurs before the noun, as in (94a), it is perceived as literary and conveys some special attitude on the part of the speaker - for example, that s/he considers the story very long and maybe tiresome. Example (3b), where the adjective follows the noun, is natural and does not carry any additional evaluative meaning.

(94) a. Anca ne-a spus o [lungă] poveste.
Anca 1p.Dat-Aux.Past.3s told a long.f.s story.f.s
"Anca told us a long story."

b. Anca ne-a spus o poveste [lungă].
Anca 1p.Dat-Aux.Past.3s told a story.f.s long.f.s
"Anca told us a long story."

Ordinary superlatives too, can occur before or after the noun but there aren't any interpretation differences of the sort noted with adjectives. Both the superlative in (95a) and the one in (95b) are interpreted in the same way and neither of them is perceived as literary or as carrying evaluative meaning.

(95) a. Anca ne-a spus [cea mai lungă] poveste.
Anca 1p.Dat-Aux.Past.3s told EST.*f.s* ER *long.f.s story.f.s*
"Anca told us the longest story."

[14]This is true for most adjectives. There is however, a small group of exceptions that is documented in Cornilescu (2005): some of these adjectives can occur only before the noun, others only after the noun, and yet others can occur on both sides, but have different meanings.

b. Anca ne-a spus poveste-a [cea mai lungă].
Anca 1p.Dat-Aux.Past.3s told story.f.s-the.f.s EST.*f.s* ER *long.f.s*
"same."

In contrast to both adjectives and ordinary superlatives, amount superlatives are restricted to the pre-nominal position (91). If amount superlatives are placed in post-nominal position they are ungrammatical (96).

(96) a. * Dan a băut bere-a [cea mai multă].
Dan Aux.Past.3s drunk beer.f.s-the.f.s EST.*f.s* ER *much.f.s*
"Dan drank the most beer."

b. * Masina mea a consumat benzin-a [cea mai puţină].
car-the my Aux.Past.3s consumed fuel.f.s-the.f.s EST.*f.s* ER *little.f.s*
"My car used the least amount of fuel."

c. * Ionuţ a intervievat fete-le [cele mai multe].
Ionuţ Aux.Past.3s interviewed girl.f.p-the.f.p EST.*f.p* ER *many.f.p*
"Ionuţ interviewed the most girls."

d. * Florin a citit romane-le [cele mai puţine].
Florin Aux.Past.3s read novels.f.p-the.f.p EST.*f.p* ER *few.f.p*
"Florin read the fewest novels."

The table in (97) summarizes the properties that distinguish the class of amount superlatives from that of ordinary superlatives: they are formed with amount items instead of gradable adjectives (or adverbs), they lack absolute readings, and in Romanian they also have a restricted distribution.

(97) *Summary*

	English/Romanian		***Romanian***
	Morphology	*Interpretation*	*Word order*
Ordinary superlatives	gradable A	absolute/comparative R	pre-N/post-N
Amount superlatives	amount item	comparative R only	pre-N only

The semantic and distribution properties of amount superlatives are quite surprising. We have seen in chapter 2 that the absolute reading is the default interpretation of ordinary superlatives; it is the quintessence of their meaning. As detailed in section 2.2.2 absolute readings are the result of the truth-conditions of the superlative construction - that is, of the superlative morpheme and of the gradable adjective that bears the superlative morphology - in conjunction with a set of presuppositional and contextual constraints. If we assume that the semantics of amount items is similar to that of gradable adjectives in that they too denote relations between individuals and degrees as exemplified in (98a) and (98b) respectively, then the interpretation of ordinary and amount superlatives involves very similar meaning components. Yet the first kind of superlatives has absolute readings but the latter does not.

(98) Semantics of gradable items

a. [many](d)(x) = 1 iff $|x| \geq d$

b. [high](d)(x) = 1 iff x is high to degree d

The distribution of Romanian amount superlatives is equally curious. If amount items are similar to gradable adjectives, we would expect amount superlatives to be able to follow the noun since, as mentioned above, gradable adjectives

and ordinary superlatives typically appear in post-nominal position.[15] At first sight, the fact that the interpretation contrast between the two varieties of superlatives correlates with a word order contrast seems to welcome a syntactic approach to the behavior of amount superlatives. Next, I introduce two such analyses and argue that

[15]The word order contrast between adjectives and ordinary superlatives on the one hand, and amount superlatives on the other - as described above for Romanian - can be found in other Romance languages as well. The examples below illustrate this for French.

(1) French ordinary superlatives precede or follow the noun

a. John a grimpé la plus haute montagne.
John Aux.Past.3s climbed the MORE *tall mountain*

b. John a grimpé la montagne la plus haute.
John Aux.Past.3s climbed the mountain the MORE *tall*
"John climbed the highest mountain."

(2) French amount superlatives must precede the noun

a. Dan a vu le plus de pays.
Dan Aux.Past.3s seen the MORE *of countries*
"Dan saw the most countries."

b. Cingular a le moins d'appel raccrochés.
Cingular has the LESS *of-calls dropped*
"Cingular has the fewest dropped calls."

c. Les tchèques boivent le plus de bière par habitant au monde.
the Czechs drink the MORE *of beer per capita in-the world*
"Czechs drink the most beer per capita in the world."

d. Les pretzels ont le moins de graisse.
the pretzels have the LESS *of fat.*
"The pretzels have the least fat.

If the amount superlative is placed after the noun in the examples above they become ungrammatical.

they are both problematic. One derives the semantic and distribution characteristics of amount superlatives from the semantics of amount items (section 3.4.2); the other from the LF properties of amount superlatives (section 3.4.3).

3.4.2 A syntactic analysis and its problems

This section discusses a syntactic analysis of amount superlatives that explains their limited range of interpretations based on the semantics of amount items. The analysis was designed for English but appears to extend easily to Romanian where the restricted interpretation of amount superlatives correlates with a restricted distribution. I show however, that upon closer examination this analysis makes certain distribution predictions that are too restrictive for both English and Romanian, and that, in addition, it relies on an unmotivated assumption. The argument for a weak syntactic theory of superlatives and against the saliency theory is therefore weakened.

Schwarz 2004b, 2004a suggests that the reason why amount superlatives lack absolute readings is that amount items are not gradable adjectives, but rather gradable determiners. This proposal builds on a similar idea in Gawron 1995 and adopts the semantics that Hackl 2000, 2001 provides for amount items like *many* as part of his analysis of amount comparatives (99).

(99) $[\text{many}](d)(f)(g) = 1$ iff $\exists x[f(x)=1 \ \& \ g(x)=1 \ \& \ |x| \geq d]$

Under this analysis, amount superlatives like (100) cannot have an absolute reading because the corresponding LF configuration is uninterpretable (100a). The superlative morpheme needs to combine with a relation from individuals to degrees

like those shown in (98) but instead its sister *many* denotes a function from degrees to relations between sets of individuals (99). This type-mismatch blocks the absolute reading and forces a syntactic derivation of the comparative reading. For (100) to be interpretable the superlative morpheme needs to move from its base position and attach to the VP as in (100b). The movement leaves behind a trace of type d and introduces lambda abstraction at the landing site, which gives us the comparative reading *Dan saw more countries than any other people did.*. See section 2.3.2 for details of how the comparative reading arises under the LF-ambiguity approach.[16]

(100) Dan saw the most countries.

a. $\text{LF}_{absolute}$

[$_{IP}$ John saw [$_{DP}$ the [$_{SuperlNP}$ -est many countries]]].

b. $\text{LF}_{comparative}$

[$_{IP}$ John -est$_{C}$ λd saw [$_{DP}$ ~~the~~ [$_{SuperlNP}$ *d*-many countries]]].

Since amount items have determiner denotations, this analysis predicts that neither them nor their superlative forms should be used in predicative position. Example (101a) shows that similarly to regular adjectives the amount item *many* can actually appear in post-copula position. However, Hackl 2000 argues that this environment does not actually provide the best test for establishing that amount items are interpreted as genuine predicates and that other test environments should be used, such as the complement position of the predicates like *look*, which does not license Null Complement Anaphora, or the predicate position of small clauses.

[16]Note that under this analysis of amount superlatives the contribution of the definite determiner *the* is ignored.

The examples in (101b,c) show that regular adjectives like *sophisticated* or *rude* are fine in these contexts, but the amount item *many* is not. English *many* cannot occur as the complement of *look* (101b) or as the predicate of a small clause (101c).

(101) a. The guests were rude/many.

b. The guests look sophisticated/*many.

c. Mary considers the guests rude/*many.

(adapted from Hackl 2001)

If we extend the analysis of English amount superlatives described above to the Romanian data, the lack of absolute readings is immediately accounted for. The question that remains is how to explain the special word order properties that amount superlatives have in this language. Remember from section 3.4.1 that in Romanian amount superlatives cannot appear in post-nominal position. If amount items and amount superlatives are like other determiners then this fact is not at all surprising. With the exception of the definite article, which is a clitic, Romanian determiners consistently precede the noun (102).

(102) Romanian determiners

a. Definite article

băiat-ul
boy-the

b. Indefinite article

(un)	băiat	(*un)	(niste)	băieti	(*niste)
a	boy	a	some	boys	some

c. Demonstrative article

acest	băiat	*băiat(-ul)	acest
this	boy	boy(-the)	this

d. Polarity sensitive articles

(vreun)	băiat	(*vreun)	(nici un)	băiat	(*nici un)
indef.	boy	indef.	not a	boys	not a

e. Any (free choice)

(oricare) băiat (*oricare)
any$_{FC}$ *boy* *any*$_{FC}$

f. Each

fiecare băiat (*fiecare)
each *boy* *each*

However, the following data from Teodorescu (2007) shows that Romanian amount items pattern with adjectives rather than determiners, contrary to what we would expect if they were interpreted as in (99). Example (103) shows that Romanian amount items can appear in post-nominal position, similarly to adjectives (94), but unlike determiners (102).

(103) A băut (puţină) bere (puţină).
PAST.3s drunk little.f.s beer.f.s little.f.s
"S/he drank little beer."

The examples in (104) show that, unlike determiners, Romanian amount items can appear in a variety of predicative positions: not only in post-copula position (104a) as their English counterparts do, but also in the complement position of *look* (104b), or in the predicate position of small clauses (104c).

(104) a. Spectatorii ăştia sunt entuziasmaţi.
Audience.m.p-the.m.p these.m are full of enthusiasm
"This audience is full of enthusiasm."

b. Spectatorii ăştia sunt puţini.
audience.m.p-the.m.p these.m are few.m.p
"There are few people in the audience."

(105) a. Anul trecut invitaţii de la revelion
year-the last guests.m.p-the.m.p from New Year's Eve party
păreau fericiţi.
looked.3p happy.m.p
"The guests at the New Year's Eve party last year looked happy."

b. Anul trecut invitaţii de la revelion
year-the last guests.m.p-the.m.p from New Year's Eve party
păreau puţini.
looked.3p few.m.p
"The guests at the New Year's Eve party last year looked few."

(106) a. Deşi îi consideră neastâmpăraţi, bunicii îşi
Although them consider.Pres.3 mischevious, grandparents-the their
iubesc nepoţii.
love.Pres.3 grandchildren-the
"Although they consider them mischevious, grandparents love their grandchildren."

b. Deşi îi consideră puţini, angajaţii aşteaptă
Although them consider.Pres.3 few.m.p, employee-the wait.Pres.3
banii cu nerăbdare.
money-the with impatience
"Although they consider it little, the employees wait for the money with impatience."

This suggests that we need a different account for the behavior of amount

superlatives in Romanian, but that it is possible to keep the syntactic analysis of English amount superlatives. I argue that this is not the right approach for English either. First, English amount items are not ungrammatical in predicative position in the way that determiners are. Amount items may not be used predicatively very frequently, but such uses are possible as the Cambridge English Grammar (Huddleston et al. 2002) and the following examples from the internet attest.

(107) a. They look few, cuz I've only seen five movies in past 6 years.[17]

b. Hmmm... what are my interests?! I've never usually bothered to consider what my actual interests are. Probably because I consider them many and varied.[18]

c. That night as they sat by their sixth camp fire, Van Cortlandt pondered over the recent days, and they seemed many since he had left home.[19]

Secondly, if we analyze amount items as determiners we need to assume that the definite article *the* preceding the superlative is simply absent. The syntactic approach to superlatives argues that *the* is interpreted as an indefinite whenever the superlative receives a comparative reading. This explains why the superlative quantifier can escape an otherwise definite island. Note however, that this assumption would not be sufficient for the syntactic analysis of amount superlatives described

[17] http://www.livevideo.com/media/commentmedia.aspx?cid=
E2932E52672843FB92ACF6D70EF78E74&showadd=1

[18] http://profile.myspace.com/index.cfm?fuseaction=user.viewprofile&friendid=29874011

[19] http://www.worldwideschool.org/library/books/youth/adventure/RolfintheWoods
/chap57.html

above since once the superlative quantifier moves out of its position inside the superlative noun phrase, the determiner *a* would have to combine with a generalized quantifier like *many countries* (cf. 100b).

This section has showed that a syntactic analysis where the interpretation and distribution properties of amount superlatives are attributed to the semantics of amount items, in particular to their having determiner meanings, is problematic and that it therefore does not count as a counterargument to the saliency theory. The next section will discuss a different syntactic analysis of amount superlatives, where amount items have adjective denotations.

3.4.3 A second syntactic analysis and its problems

Below I discuss a different syntactic analysis of amount superlatives where their restricted interpretation and distribution is the result of their inability to refer. I show that it too runs into conceptual and empirical problems and therefore conclude that the behavior of amount superlatives does not provide evidence for a weak comparative theory.

Gawron 1995 notes that the inability of amount superlatives to have absolute readings is related to their inability to refer. To illustrate let us consider the following two examples.

(108) a. Brown's campaign has been joined by the [most] volunteers.

b. Brown's campaign has been joined by the [largest] group of volunteers.

Both the amount determiner phrase, *the most volunteers*, and the ordinary one, *the largest group of volunteers*, have a comparative reading on which we com-

pare campaigns with respect to how many volunteers joined them. However, the ordinary superlative in (108b) also allows a reading that the amount superlative in (108a) doesn't. This is the absolute reading according to which the ordinary determiner phrase *the largest group of volunteers* can refer. Suppose that there are 20 groups of volunteers that joined campaigns and that among them the British Trust for Conservation is the group with the largest number of volunteers. On the absolute reading, the largest group of volunteers picks out the British Trust for Conservation and the sentence in (108b) means: Brown's campaign was joined by the British Trust for Conservation. Given the same scenario, the sentence in (108a) can never mean this, which shows that the determiner phrase *the most volunteers*, cannot pick out a referent by its cardinality.

In the previous section we have seen that this interpretation contrast between amount superlatives and ordinary ones cannot be accounted for by assigning amount items determiner denotations. In Teodorescu 2007 I proposed to analyze amount items on a par with gradable adjectives and suggested that, under the syntactic analysis of Heim 1999 and Szabolcsi 1986[20] the inability to refer of amount superlatives follows from the fact that the interpretation of the superlative quantifier co-varies with the interpretation of the definite article preceding the superlative noun phrase. Absolute readings arise when *-est* is interpreted inside the DP containing it on the surface and the article preceding the superlative is interpreted as *the* (109a). In contrast, comparative readings correspond to an LF where *-est* attaches to a VP node and where the article preceding the superlative is interpreted as

[20]See section 2.3.2, for a detailed presentation of this approach.

a (109b). Under the assumption that definite descriptions are referential, while indefinite ones aren't this analysis predicts that only superlative DPs with an absolute reading can refer.

(109) a. Brown's campaign has been joined by [THE -est$_C$ many volunteers].

b. Brown's campaign -est$_C$ has been joined by [A t$_d$ many volunteers]].

If we postulate that whenever the *-est* operator is merged with an amount item as its sister it must scope out of the determiner phrase containing it on the surface and attach at the VP level, we would block the absolute reading of amount superlatives and the syntactic derivation of the comparative reading would ensure that amount superlatives are non-referential. The restricted distribution of amount superlatives in Romanian can be derived from the syntax of post-nominal adjectives as follows.

Alexiadou (2001) argues that in Romance the post-nominal position is dedicated to relative clauses. According to her, all post-nominal adjectives have the syntax of reduced relatives and, as such, they all have a predicative source. Evidence in favor of this claim comes from a series of adjectives whose interpretation varies depending on whether they occur before or after the noun. Whenever these adjectives follow the noun, there is only one possible reading and this is the intersective reading. The non-intersective reading is excluded in this position. This is illustrated in (110) and (111) with examples from Spanish and French.

(110) a. el chico pobre
the boy poor
(Post-nominal position: poor = impoverished/*pitiable)

b. el pobre chico
the poor boy

(Pre-nominal position: poor = pitiable/*impoverished)

(111) a. la française pauvre
the French woman poor
(Post-nominal position: poor = impoverished/*pitiable)

b. la pauvre française
the poor French woman
(Pre-nominal position: poor = pitiable/*impoverished)

If the adjective *poor* is placed in post-nominal position as in (110a) and (111a) it can only mean *impoverished*, which is the intersective interpretation. If *poor* is placed before the noun, as in (110b) and (111b), it has a non-intersective reading meaning *pitiable*.

Zooming in on Romanian now, we know that it is a Romance language, but can the above proposal be extended to it as well? The examples below involving the adjectives *sărac*, "poor" and *adevărat*, "true", show that this is indeed the case. Both of these adjectives have different meanings depending on whether they precede or follow the noun and, if they are placed in post-nominal position, only one interpretation is possible. This interpretation is different from the one in pre-nominal position, but identical to the one in predicative position.

Examples (112) show that the interpretation of *sărac*, "poor" parallels the interpretation of its counterparts in French and Spanish. When *sărac* follows the noun, it is unambiguously interpreted as "impoverished", the interpretation "pitiable" not being possible here. In addition, when it occurs in a post-copula environment, as in (112c), *sărac* again can only mean "impoverished".

(112) a. băiat-ul sărac
boy.m.s-the.m.s poor.m.s
"the poor boy" (Post-nominal position: poor = impoverished/*pitiable)

b. sărac-ul băiat
poor.m.s-the.m.s boy.m.s
"the poor boy" (Pre-nominal position: poor = pitiable/*impoverished)

c. Acest băiat este sărac.
this.m.s boy.m.s is poor.m.s
"This boy is poor." (Post-copula position: poor = impoverished/*pitiable)

Similarly, the adjective *adevărat* can only mean "true" when it occurs in post-nominal or post-copula environments. The interpretation "quite a", which is possible in pre-nominal position, is excluded from these contexts.

(113) a. o poveste adevărată (Cornilescu 1992: 203)
a story.f.s true.f.s
"a true story" (Post-nominal position: true story/*quite a story)

b. o adevărată poveste (Cornilescu 1992: 203)
a true.f.s story.f.s
"a true story" (Pre-nominal position: quite a story/*true story)

c. Această poveste este adevărată.
this.f.s story.f.s is true.f.s
"This story is true." (Post-copula position: true story/*quite a story)

If we assume that Romanian is just like the other Romance languages in that post-nominal adjectives are always reduced relatives, we can immediately derive the interpretation pattern above. By constraining post-nominal adjectives to always be represented syntactically as reduced relatives we ensure that the range of readings available in predicative environments is the same as those in post-nominal

position. In addition, the fact that in this language amount superlatives are illicit in post-nominal position follows straightforwardly. Post-nominal amount superlatives are inside relative clauses, and as such the requirement of the *-est* operator to scope out cannot be satisfied as it would violate the relative island constraint.[21]

I propose that such a syntactic account is not a serious contender to the saliency theory because it relies on too many assumptions. First, the non-referential interpretation that amount superlatives get under the syntactic analysis is based on the assumption that *the* is interpreted as an indefinite whenever the superlative receives a comparative reading (Szabolcsi 1986, Heim 1999). This assumption relies on Szabolcsi's generalization that superlatives with comparative readings behave like indefinites, which has been argued to be problematic (see Sharvit and Stateva 2002). Secondly, the constraint that rules out the absolute reading is only motivated by the fact that we would otherwise get an unattested interpretation. This means that neither the lack of referentiality nor the lack of absolute readings is actually explained. In addition, the island constraint that rules out amount superlatives in post-nominal position provides only a partial explanation for the restricted distribution of these expressions. The question is rather why can't amount superlatives appear in predicative position, as suggested by examples like (114).

(114) a. # Aceştia sunt cei mai mulţi copii.
these *are* EST ER *many children*

[21] As noted in section 3.4.1 amount superlatives are excluded from the post-nominal position not only in Romanian but also in other Romance languages, like French, for example. The relative island constraint suggested here could account for the restricted distribution of amount superlatives across Romance.

b. # These are the most children.

I conclude that amount superlatives do not provide evidence for a weak comparative theory of superlatives and that therefore, they are not a counterargument to the saliency theory.

3.4.4 Amount superlatives under the saliency theory

In this section I propose that both the interpretation and the distribution of amount superlatives can receive a non-syntactic analysis that is consistent with the saliency theory of superlatives introduced in chapter 2. In particular, I argue that the meaning contrast between amount and ordinary superlatives follows from the fact that the former compare cardinalities/amounts while the latter compare properties, and that amount superlatives are ungrammatical in predicative position only when they are not contextualized. The discussion focuses on amount superlatives that modify count nouns but it can be extended to those that modify mass nouns.

I assume that amount items are similar to gradable adjectives in that they denote relations between an individual and a degree; both are of type <d,et> and hence an appropriate argument for the superlative morpheme. However, unlike gradable adjectives, amount items do not measure properties but cardinalities. An adjective like *high* for example, relates individuals to their corresponding degree of HEIGHT (115a), while an amount item like *many* relates them to their corresponding degree of cardinality (115b).

(115) a. [high](d)(x) = 1 iff x is high to degree d
(where d∈D_{HEIGHT} and x∈D_e)

b. [many](d)(x) = 1 iff $|x| \geq d$

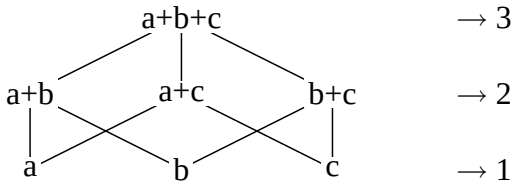
(where $d \in D_{CARDINALITY}$ and $x \in D_e$)

Note that if we consider the domain of discourse to consist only of atomic individuals like John or Bill then the lexical entry in (115b) is not very informative: all individuals have cardinality one. Following Link 1983, I assume that the domain of discourse also includes pluralities. Pluralities are non-atomic individuals that are created by the sum formation operator "+". The domain of individuals can now be represented as $*D_e$, the closure of D_e under the sum formation operator. Elements of $*D_e$ are partially ordered by the part-of relation "$\leq$". To illustrate, suppose that D_e consists of the three individuals in (116a). $*D_e$ will then contain the same atomic individuals, as well as all their sums (116b). The part-of-relation imposes a partial order on $*D_e$, which is reflected in the lattice in (117).

(116) a. D_e = {a, b, c}

b. $*D_e$ = {a, b, c, a+b, b+c, a+c, a+b+c}

(117)



Once we define the domain of individuals in this way, we can update the lexical entry of *many* in (115b) so that it is no longer a truism. The new meaning for *many*

is given in (118): it maps individuals in *D_e to a corresponding degree of cardinality depending on how many atomic parts they have.

(118) [many](d)(x) = 1 iff x has d-many atomic parts
(where d∈$D_{CARDINALITY}$ and x∈*D_e)

As suggested on the right-hand side of the figure in (117) atomic individuals are mapped to cardinality 1. Pluralities that consists of 2 atomic individuals (e.g. a+b, b+c, a+c) are mapped to cardinality 2, those that consist of 3 (e.g. a+b+c), are mapped to cardinality 3, etc.

With this information in place we are now ready to discuss the interpretation of amount superlatives like (119), which have been claimed to have only a comparative reading.

(119) John interviewed the most students.

a. *Absolute reading*: absent

b. *Comparative reading*: John interviewed more students than anyone else.

Remember from section 2.4 that under the saliency theory there is no ambiguity in the semantics of superlatives. The superlative morpheme picks out of a set of individuals, the unique individual such that its degree of R-ness is the highest, where R is a relation of type <d,et> determined solely by the denotation of the adjective and noun that the superlative morpheme takes scope over. This means that when interpreting the superlative in (119) the comparison relation R is always determined by the meaning of the amount item *many* in conjunction with that of *students* as in

(120). We are thus comparing the cardinalities of (non)-atomic individuals that have the property of being students and the denotation of the superlative noun phrase comes out as in (121).

(120) R = λd.λx. x has d-many atomic parts and x$\in$*STUDENT
(where *STUDENT is the closure of the predicate STUDENT under the sum formation operator "+")

(121) Denotation of the superlative noun phrase
[most students](d)(x) = 1 iff $\exists$d[x$\in$*STUDENT and x has d-many atomic parts & $\forall$y [y$\in$C and y$\neq$x $\rightarrow$ y does not have d-many atomic parts]]

Under the saliency theory the contrast between absolute and comparative readings is the result of how the values of the free variable C are set. Comparative readings arise when the value of C is determined by a salient function that associates salient individuals with individuals that have some degree of R-ness. Suppose that our sentence in (119) is uttered in a context where we are talking about John, Bill, and Tom, and that each of them interviewed one or more students as in (122).

(122) a. John interviewed student a, student b, and student c.
b. Bill interviewed student a and student b.
c. Tom interviewed student c.

The free variable C will collect all the (non)-atomic student individuals that John, Bill, and Tom interviewed as in (123) and our sentence receives an interpretation according to which the number of students that John interviewed is larger than the number of students that Bill or Tom interviewed.

(123) C = {a+b+c, a+b, c}

In contrast, absolute readings arise when the variable C ranges over individuals with some degree of R-ness that are salient in and of themselves. Suppose that we set C to collect all the students in the world, in the same way we did with mountains when we derived the meaning of "*John climbed the highest mountain.*" as "*John climbed mount Everest.*". Since our domain now contains not only atomic individuals but also pluralities, C will collect all the (non)atomic individuals in the world that have the property of being students.

(124) C = {x| x∈*STUDENT IN THE WORLD}

The denotation in (121) will thus describe an individual that has the largest number of atomic parts when compared to any other individuals in the extension of *STUDENT IN THE WORLD. Under the assumption that pluralities are non-identical if there is at least some non-overlap[22] this individual can only be the maximal plurality of students since only it has more atomic parts than any other plurality of students. The absolute reading of amount superlatives is therefore very similar in meaning to the interpretation of *all*. I suggest that the reason why amount superlatives are not used with this kind of interpretation is a pragmatic one. Horn 1972 and Atlas and Levinson 1981 have proposed the pragmatic rule in (125) (cf. dicussion in Krifka 1989), which can be derived from Gricean principles.

[22] A complete non-overlapping restriction seems too strong as we would not be able to account for the comparative reading of *John interviewed the most students* in the scenario presented in (122). See however Hackl 2009 for such an assumption and for a semantic account based on it for the absence of absolute readings.

(125) If two expressions α, β are (i) both applicable, (ii) α is more specific than β, (iii) α is not more complex than β, then choose α.

Both *all students* and *most students* (under the absolute reading) describe the same kind of situation but *all students* is more informative since it can only be interpreted as denoting the maximal plurality of students. *All students* is also arguably less complex, so according to the rule in (125) we shouldn't use the expression *most students* if we mean to say "all of them".

The other question raised in the literature concerning the interpretation of amount superlatives is their inability to refer in the same way that ordinary superlatives do. Consider for example the sentences in (108) repeated here as (126). The ordinary superlative DP in (126a) has an interpretation according to which it refers to a particular group of volunteers (for a detailed discussion of this reading see section 3.4.3). The amount superlative DP in (126b) cannot have this type of interpretation.

(126) a. Brown's campaign has been joined by [the largest group of volunteers].

b. Brown's campaign has been joined by [the most volunteers].

The syntactic analyses discussed in the previous two sections derive this effect by assigning amount items determiner meanings or by claiming that the definite article preceding amount superlative NPs is necessarily interpreted as an indefinite. Both of these arguments have been shown to be problematic. I propose below a different explanation for this meaning contrast, which has to do with the type of individuals that are compared by the two superlatives.

One of the presuppositions of EST is that the comparison set must be a subset of the right domain of the comparison relation R (cf. discussion in section 2.2.1). The comparison relation R for the ordinary superlative in (126a) is given in (127a); the one for the amount superlative in (126b) is given in (127b).

(127) a. R(d)(x) = 1 iff x is d-large and x is a group of volunteers
(where d∈$D_{LARGENESS}$ and x∈ D_e)

b. R(d)(x) = 1 iff x has d-many atomic parts and x∈*VOLUNTEER
(where d∈$D_{CARDINALITY}$ and x∈ *D_e)

This means that in (126a) the individuals in the comparison set are groups, while in (126b) they are (non)-atomic volunteers. Even though a groups of volunteers and a plurality of volunteers may have similar extensions, they are very different linguistic objects. A group is a regular individual that has no atomic subparts. In contrast to the members of a plurality, those of a group are not linguistically transparent. This is evident from the fact that we cannot combine *many* with the singular noun *group*, which suggests that we cannot evaluate a group in terms of its atomic parts with a cardinality measure function. Other collective nouns like *couple*, *team*, *committee*, etc. behave in the same way. Consider for instance the cumulative inference in (128). The fact that we cannot infer (128c) from (128a) and (128b) indicates that couples are atomic individuals.

(128) a. John and Mary are a couple.

b. Mary and Bill are a couple.

c. ⇸ John and Mary and Bill are (a) couple(s).

d. → John and Mary and Mary and Bill are couples.

(from Hackl 2001: 242)

This suggests that the reason why *the largest group* can refer to a particular group, while *the most students* cannot is that the entities we are comparing in the two cases are very different. In the first case the superlative morpheme ranges over atomic individuals that have the property of being groups of volunteers and picks the one that is at the top of a large-ness scale. In the second case EST ranges over pluralities of volunteers, whose extension is unrelated to that of groups of volunteers,[23]and picks the one that is at the top of a cardinality scale.

Regarding the distribution of amount superlatives we've seen in the previous section that they do not appear easily in predicative position. This property, in conjunction with their inability to refer in the way that ordinary superlatives do, has been taken as evidence that amount superlatives have determiner meanings (cf. discussion in Gawron 1995 and Schwarz 2004b, 2004a). I show below that in contrast to determiners amount superlatives can actually appear in predicative position if additional information is provided (cf. (129) and (130)). The reason for this is that the individuals we are comparing are pluralities and they are not comparable by themselves. In the absence of such additional information amount superlatives are forced to have an interpretation that is akin to *all*, but we've seen above that if we wanted to convey this meaning we wouldn't use an amount superlative.

(129) English amount superlatives in predicative position

[23]Given a set of salient volunteers C, an amount superlative will compare the (non)-atomic individuals in the closure of this set, not just those sums that correspond to groups of volunteers.

a. These are the most children that I've ever seen in a hotel.

b. This is the most trophies that you'll see in one place.

(130) Romanian amount superlatives in predicative position

a. Aceştia sunt cei mai mulţi copii pe care
these are EST.*m.p* ER *many.m.p children* ACC *which*
i-am văzut la un loc.
*cl.3p.*DAT-PAST.*1s seen at a place*
"These are the most children I've seen in one place."

b. E cea mai multă apă pe care a băut-o vreodată.
is EST.*f.s* ER *much.f.s water* ACC *which* PAST.*3s drunk-it ever*
"It's the most water s/he's ever drunk."

The contrast between the examples above and those in (114) suggests that the distribution properties of amount superlatives are different from both those of gradable adjectives and those of determiners. It makes them similar however, to other amount denoting expressions such as cardinals. As shown in (131) the predicative use of a cardinal would be infelicitous in the absence of some sort of contextualization like that provided by the *of-phrase*.

(131) a. Aceşti copii sunt cinci #(dintre cei mai buni).
these children are fice among EST.*m.p* ER *good*
b. These children are five #(of the best).

In Romanian this distributional similarity between amount superlatives and cardinals extends to the post-nominal position as well, since both of these amount denoting expressions are ungrammatical when placed after the noun (cf. (96) for amount superlatives and (132) for cardinals).

(132) Matei a băut (cinci) beri (*cinci).
Matei PAST.*3.s drunk five beers five*
"Matei drank 5 beers."

To conclude, this section has shown that, in contrast to what has been previously argued, the semantic and distribution properties of amount superlatives can be accounted for without resorting to obligatory covert movement operations that require the superlative morpheme to take VP scope. The behavior of amount superlatives is therefore not an argument against the saliency theory.

3.5 Summary

This chapter provided a wide range of arguments that the saliency theory is to be preferred to previous analyses of superlatives. It can derive all the classic comparative readings that previous analyses do and, in addition, it can account for several comparative readings that strong comparative theories cannot. Specifically, it was shown that only the saliency theory can generate the following three types of comparative readings: (i) readings where the comparison set is not constrained by the predicate of the sentence containing the superlative, (ii) readings that do not dependent on the presence or interpretation of focus/wh-phrases, and (iii) readings that disobey locality constraints.

It was also shown that the saliency theory fares better than a weak comparative theory that derives some comparative pragmatically, while deriving others syntactically. The claim for this type of weak comparative theory relies on a particular kind of comparative readings, such as the upstairs de-dicto reading, and on

unambiguous superlatives. Both of them have been argued to require a syntactic analysis. The argument against the saliency theory has been invalidated in two ways. First, it was argued that the upstairs de-dicto reading is an instance of a more general phenomenon that pertains to the interpretation of noun phrases in intensional contexts and that, therefore, it is not an effect that needs to be built into the semantics of superlatives. Secondly, I showed that the syntactic analyses that have been proposed for amount superlatives run into both empirical and conceptual problems and proposed instead an account that is consistent with the saliency theory. As such, amount superlatives cannot count as evidence for a syntactic approach to superlatives.[24]

[24]There is a second case of unambiguous superlatives that has been argued to favor a syntactic analysis over a purely pragmatic approach like the saliency theory and which has not been discussed above. These are superlatives that are preceded by a possessive determiner. Schwarz 2005 notes that superlative sentences like (1) cannot have a comparative reading and suggests that this is because the possessive determiner blocks the extraction of -est from the containing noun phrase. However, it is not obvious that these superlatives are best served by a syntactic analysis either since we have no account of why the possessive determiner behaves so differently from the definite article, which is considered to allow the movement of -est in spite of being known for blocking extraction. In addition, if this were the only piece of evidence in favor of the weak comparative theory, it would not be sufficiently convincing.

(1) John summarized my longest paper.

a. *Absolute reading* (available):

John summarized the longest paper among my papers.

b. *Comparative reading* (not available):

John summarized the longest paper among my papers that were summarized.

Chapter 4

Exceptional adjective orderings: a new account and an argument from superlatives

4.1 Introduction

The goal of this chapter is to re-examine adjective orderings by focusing on how meaning affects word order.

In various languages, when nouns are modified by more than one adjective at a time certain ordering restrictions arise. Consider for instance the English examples in (133) and (134). In the absence of any special intonation, the order of the pre-nominal adjectives in (133a) is considered grammatical and natural, while the one in (133b) is generally perceived as awkward.

(133) a. a tall Russian lawyer

b. # a Russian tall lawyer

Similarly, the noun phrase in (134a) is fine, but that in (134b) is not.

(134) a. innocent naval officers (Bache 1978: 16)

b. # naval innocent officers

Such cases have captured the attention of linguists for a long time and there is a large body of literature discussing adjective orderings. It ranges from early work (Bloomfield 1933, Whorf 1956, Ziff 1960) to various grammars and in-depth descriptions (Quirk et al. 1972, Biber et al. 1999, Hill 1958, Vendler 1963, Lance 1968, Teyssier 1968, etc.); from corpus studies (Bache 1978, Vandelanotte 2002, Wulff 2003) and typological studies (Hetzron, 1978, Dixon 1982, Sproat and Shih 1991) to syntactic analyses (Vendler 1968, Bernstein 1993, Cinque 1994, Sadler and Arnold 1994 and others following themand psycholinguistic and neurolinguistic experiments (Martin 1969a, 1969b, 1970; Martin and Ferb 1973; Danks and Schwenk 1972, 1974; Martin Richards 1975; Kemmerer et al. 2007).

However, questions like (i) what adjectives are ordered? (ii) how are they ordered? and (iii) why are they ordered the way they are? are still very much a matter of debate. I propose to address these issues from a novel perspective, namely focusing on cases where adjective ordering restrictions do *not* apply. As we will see, looking at exceptions to the rule turns out to be a fruitful tool in learning more about the rule itself. I examine the range of attested exceptions and introduce two new such classes. By comparing them to the cases where adjective orderings *do*

apply I obtain a new generalization for the order of multiple adjectives. This enables me to show that previous approaches which analyzed the ordering constraints on multiple adjective sequences in terms of the semantics of individual adjectives are insufficient.

I propose instead an explanation that takes into account the meaning of the whole nominal phrase.

(135) Adjective ordering restrictions (AOR) do not apply to multiple adjective structures that are truth-conditionally distinct.

This result has consequences for how the architecture of the grammar should be conceived. While we know that syntactic well-formedness is sensitive to lexical semantic information, the contribution of this chapter is to show that compositional semantics too, can have an impact on syntax. In particular, I show that the meaning of the overall noun phrase can restrict the application of syntactic principles like word order. This is in contradiction to many contemporary approaches to grammar which hold that the semantic component has no influence on the syntactic one.

The chapter is organized as follows. In section 4.2, I present background on the relative order of adjectives. We'll see that the same ordering restrictions hold in a variety of languages. Nevertheless, there are some adjectives that do not follow this rigid word order requirement. This raises the question of why some adjectives are ordered while others are not that will be at core of this chapter. To answer it we first need to explore whether there are any syntactic differences between the two classes of adjectives. In section 4.3 I will review the two trends in the syntactic analysis of adjectives: the traditional model (e.g. Baker 1978, Hornstein and Lightfoot

1981, Chomsky 1986) and the cartographic model (Cinque 1994 and many others following him). Then I discuss the predictions they make for adjective orderings. At first sight, it seems that the cartographic approach fares better in capturing the difference between adjectives that are ordered and those that are not. To evaluate this model further I propose two new test cases where AOR do not apply. In section 4.4 I introduce the first case, namely operator adjectives, and show that an extension of the cartographic model can explain their behavior syntactically. In section 4.5 I present the second test case, superlatives, and demonstrate that their free word order properties cannot receive a syntactic explanation. This means that neither the traditional view, nor the cartographic alternative can account for all the adjective ordering data. In section 4.6 I propose a new account of adjective orderings and discuss its implications for the model of grammar. Section 4.7 concludes the chapter.

4.2 Background on adjective orderings

4.2.1 Multiple adjectives are normally rigidly ordered

In English, the order of prenominal adjectives is relatively fixed. For example, the ordering in (136a) gets 360 hits on Google, while the one in (136b) doesn't get any.

(136) a. big rectangular table

b. # rectangular big table

Among the examples in (137), the ordering in (137a) is the only option as long as the adjectives are pronounced with neutral intonation. That is, all adjectives show the same secondary stress pattern and they are not followed by pauses; only the noun receives primary stress (Hill 1958, Lance 1968, Martin 1970, Martin and Ferb 1973).

(137) a. a beautiful small black cat

b. # a beautiful black small cat

c. # a small beautiful black cat

d. # a small black beautiful cat

e. etc.

Example (138) shows nouns that are modified by more than three adjectives at a time. If pronounced with neutral intonation, the order of the adjectives in (a-c) is claimed to be the only possible one. Examples with long strings of multiple modifiers such as these are relatively rare, most nouns being modified by one or two adjectives at a time (see report from Biber et al)

(138) a. a big new brown French leather jacket (Lance 1968:210)

b. a magnificent ornamental 18th century carved mahogany mantelpiece (Halliday 1994:192)

Rigid word order among multiple adjectives is not a quirk of English. In fact, it has been suggested that adjective ordering restrictions are universal. The examples below show similar requirements in a variety of other languages. The chart in (140) compares the ordering of the adjectives *beautiful*, *big*, and *red* in six

different languages and shows that when the adjectives precede the noun we get the same ordering as in English. In (140), where the adjectives follow the noun, the ordering is the mirror image.

(139) Hetzron 1978:170 (adapted)

ENGLISH	(a)	beautiful	big	red	ball
GERMAN	(ein)	schöner	grosser	roter	Ball
HUNGARIAN	(egy)	szép	nagy	piros	labda
POLISH		pi̧ekna	duża	czerwona	piłka
TURKISH	(bir)	güzel	büyük	kırmızı	top
HINDI	(ek)	sun̪dər	bəṛi	lal	fem

(140) a. WELSH

cwpan mawr gwyrdd Sieineaidd
cup big green Chinese
"a big green Chinese cup" (Rouveret 1994:213)

b. MOKILESE

mwok sol pwu:wu:sso
cup black round-DET
"that round black cup" (Sproat and Shih 1991:581)

c. BAHASA INDONESIA

bola merah besar tjantik
ball red big beautiful
"beautiful big red ball" (Plank 2007:62)

This has led to the conclusion that there are semantic classes of adjectives that pattern together with respect to ordering restrictions, and various such linear orders have been proposed. Some examples are given in (141). The proposals differ in the level of detail, but otherwise agree with each other.

(141) How adjectives are ordered (AOR):

a. Identifying adjectives >Characterizing adjectives >Classificatory adjectives (Teyssier 1968)

b. Evaluative >Color, Age, Shape, Size >Denominal, Nationality/Provenance (Hill 1958)

c. Evaluative/Quality >Size >Shape >Age >Color >Participle >Nationality/Provenance >Denominal adjective (Quirk et al. 1972)

d. Value >Dimension >Physical property >Speed >Human Propensity >Age >Color >Denominal adjective (Dixon 1982)

e. Quality >Size >Shape >Color >Provenance (Sproat and Shih 1991)

Teyssier (1968) for example, uses three semantic classes ordered as in (141a). The identifying class contains adjectives like *same*, *only* and *first*. The classificatory class consists of adjectives pointing to a specimen of a class, such as denominal, nationality and relational adjectives, as well as other adjectives that have come to form a compound with the noun (e.g. *blackbird*, *blue-bell*), the latter being left aside in our subsequent discussion. The characterizing class contains the rest of the adjectives. Hill (1958) explores the relative ordering of characterizing adjectives (Teyssier's "middle" class) in more detail and proposes two subclasses: one

contains color, age, shape and size adjectives, the other, which I labelled for convenience "evaluative", contains the rest of the adjectives (141b). Quirk et al. (1972) and Dixon (1982) expand these orderings even further, proposing the restrictions in (141c) and (141d) respectively. While the linear orders in (141a-d) are based mainly on English data, Sproat and Shih (1991) confirms their validity using cross-linguistic evidence.

4.2.2 Three cases of flexible word order

Even though linearizations like those in (141) are a widespread phenomenon, not all adjectives are rigidly ordered. Three such cases have already been discussed in the literature.

The first case consists of adjectives similar to relative clauses. Sproat and Shih (1991) argue that in Chinese such adjectives are freely ordered. In (142a) the order of the adjectives is what we would expect according to AOR (141). However, the order in (142b), which departs from rigid word order requirements in (141), is also fine. In both examples the adjectives are marked by the particle *de*, in the same way that full-fledged relative clauses are (143a). Example (143b) shows that adjectives which cannot be used in predicative position are ungrammatical when marked by the particle -*de*.[1]

[1]This class of exceptions has recently come under debate: on the one hand, additional data from Mandarin Chinese argues against equating adjectives marked by *de* with reduced relatives (Paul (2005)). On the other hand, data from Greek shows that adjectives homophonous with reduced relatives can be subject to ordering restrictions (Alexiadou and Wilder (1998)).

(142) a. hao-de yuan-de panzi (QUALITY >SHAPE)
good-DE *round*-DE *plate*
'nice round plate'

b. yuan-de hao-de panzi (SHAPE >QUALITY)
round-DE *good*-DE *plate*
'round nice plate'

(Sproat and Shih 1991:565)

(143) a. lai-de chezi (Sproat and Shih 1991:572)
come-DE *car*
'the car that is coming'

b. * qian-de zongtong (Sproat and Shih 1991:574)
former-DE *president*
'former president'

In English, adjectives that bear "comma intonation" (Sproat and Shih 1991), that is, are followed by pauses, are a second case of non-rigid word order (Hill 1958, Lance 1968, Martin 1970, Quirk et al. 1972, Martin and Ferb 1973, Sproat and Shih 1991, a.o.). In example (144a), the adjectives *large* and *red* bear neutral intonation and are ordered according to AOR. In (144b) the reversal of the normal word order is accompanied by "a juncture in the rhythm of the phrases".

(144) a. the large red chair (Size >Color)

b. the red, large chair (Color >Size)

(Martin 1970:379)

(145) a. She loves all those wonderful orange Oriental ivories.

(QUALITY >COLOR >PROVENANCE)

b. She loves all those Oriental, orange, wonderful ivories.
(PROVENANCE >COLOR >QUALITY)
(Sproat and Shih 1991:578)

Finally, the third case of non-rigid word order consists of adjectives that bear focus (Martin and Ferb 1973; Cinque 2005c,2005a etc.). The order in (146a), for example, is the only one allowed when the two adjectives are pronounced with unmarked intonation. This is as predicted by (141). However, if the adjective *black* is focused it can escape ordering restrictions, and the reverse word order becomes possible (146b).

(146) a. small black cat (SIZE >COLOR)
b. BLACK small cat (COLOR >SIZE)

To summarize, the current view in the literature is that modifying adjectives which are similar to relative clauses, or which exhibit special intonation (that is, are followed by pauses or bear focus intonation) can escape ordering restrictions (147). All the other adjectives, which I will call from now on *plain adjectives*, are subject to AOR.

(147) Exceptions to AOR:
a. adjectives that resemble Relative Clauses
b. adjectives that bear 'comma intonation'
c. adjectives that bear focus intonation

To answer the question of what sets the non-rigid word order cases apart from the rigidly ordered ones I will first turn to the syntactic literature and discuss

previous analyses of attributive adjectives, and the predictions they make for the word order of multiple adjectives.

4.3 Previous accounts of adjective ordering restrictions (AOR)

In the theoretical literature on adjectives and adjective orderings there are two types of solutions that have been proposed to account for strings of multiple adjectives like those introduced above. The traditional syntactic model represents adjectives as adjuncts and predicts multiple adjectives to be freely ordered. Rigid adjective orderings like those noted in section 4.2.1 are regarded as an exception that cannot be explained, at least not by resorting to the syntactic or semantic properties of the adjectives involved. Under the Cinquean model of representing adjectives as specifiers of dedicated functional projections the default and exception cases are reversed: this time we expect all adjectives to be ordered and those that aren't form a special category, which receives a syntactic explanation. Section 4.3.1 presents some background as to why these two models are representative for a large spectrum of syntactic analyses of adjectives. The reader familiar with the issues that arise when trying to fit adjectives, and modifiers more generally, within the Chomskyan framework can skip this section.[2] The two models and the accounts they

[2]Both models that I present are set within X-Bar theory; the second is also compatible with LCA (Kayne 1994). For discussion on the syntactic representation of modifiers in Bare Phrase Structure see Chomsky 1995, Matushansky 2002, and Hornstein and Nunes 2008.

offer for the order of multiple adjectives are discussed in sections 4.3.2 and 4.3.3 respectively. We'll see that the Cinquean approach appears to be preferred.

4.3.1 Fitting adjectives in the Chomskyan framework

The syntactic representation of attributive adjectives has long been a controversial topic, the range of proposals being extremely varied.[3] This is due to both descriptive and theoretical challenges.

Descriptively, adjectives exhibit a rather complex set of properties: 1) they may either precede or follow the noun they modify and depending on which of these options is realized, 2) they can or cannot take complements and 3) their interpretation may vary. Also 4) some adjectives are invariably attributive, some invariably predicative, and others are both. Last, but not least 5) some adjectives are ordered while others are not.

Even if we abstract away from the intricacies of the empirical landscape and narrow down the data to a simple adjective-noun sequence, the syntactic representation of adjectives is still a problematic issue. Theoretically, attributive adjectives – and modifiers in general – are difficult to capture given standard assumptions about syntactic structure. For example, in the strict version of the classic X-Bar theory of phrase structure (Chomsky 1970, Jackendoff 1977, Stowell 1981, and many others afterwards) there is no room for adjectives as long as the system is restricted to lexical categories.

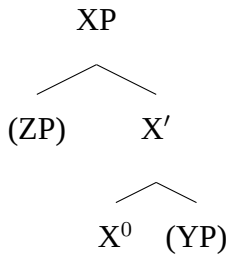
[3] In fact, virtually all possible syntactic configurations have been proposed for attributive adjectives except the complement position.

In this model, the basic phrase structure configuration is that in (148), where only heads, complements and specifiers are recognized, and there is no recursion at any bar level. Additionally, only binary branching is possible (Kayne 1984).

(148) a. $X' = X^0$ (YP)

b. XP = (ZP) X′

c.



All phrases are required to have a head (X^0), but not necessarily a complement (YP) and/or a specifier (ZP). The head is defined as the zero-bar level element that determines the categorial properties of the phrase. Complements and specifiers are phrasal categories that are defined in relational/configurational terms: complements are sisters to X^0 and daughters of X′; specifiers are sisters to X′ and daughters of XP.

Two problems arise if one tries to fit adjectives into this model: one problem pertains to the structural position of the adjective, the other to recursion. To illustrate the first challenge, let's consider a simple case, such as *lucky student*, where the noun is modified by a single adjective. Which of the three syntactic positions in (148) should the adjective occupy? Should *lucky* be represented as the head of the phrase, the complement, or the specifier? None of these options work as long as we assume the system to contain only lexical categories.

First, if the adjective were the head of the phrase we would expect the distribution of the adjective-noun combination to be the same as that of a simple adjective, since it's the head that determines the categorial properties of the phrase. However, the distribution of *lucky student* follows the same pattern as nouns rather than adjectives, as shown by the contrast in (149). This suggests that adjective-noun combinations should be represented as nominal phrases rather than adjectival phrases, which means that the noun is the head.[4]

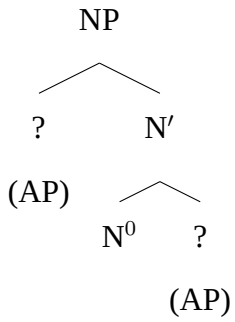
(149) a. He met a [student].

b. He met a [lucky student].

c. * He met a [lucky].

With the noun as the head of the phrase, we are left with two possible configurations for the adjective: the complement of N^0 position or the specifier of NP position (150). Neither is appropriate.

(150)



[4]Once functional categories are introduced into the system, the possibility of analyzing the adjective as the head of the phrase re-emerges. I will come back to this point in section 4.3.3. Right now, for expository purposes I will stick to a phrase structure system where only lexical categories are present.

The complement position is reserved for the head's – in this case the noun's – (syntactic) arguments. Those arguments are subcategorized for, and complete the meaning of, the noun they combine with; in other words, they saturate its valency. Modifying adjectives differ from arguments not only semantically (in that they are not involved in saturation), but also syntactically (eg. Baker 1978, Radford 1988), suggesting that the two classes need to be kept apart.

The specifier of NP position is not well-suited for modifying adjectives either (see Jackendoff 1977 for such a proposal and Abney 1987 for a critique). First, there is a set of miscellaneous adnominal constituents that are not noun complements. That set includes determiners, possessors, quantifiers, adjectives, and relative clauses. These elements differ from each other in their syntactic behavior (eg. some of them may co-occur, while others cannot) and therefore, they cannot all fit in the specifier of NP position. Secondly, following much research on the similarities between sentences and noun phrases, there is now general agreement that the specifier position of lexical categories is dedicated to subjects (e.g. Fukui and Speas 1986).

Besides the issue of the structural location of the adjective, there is a second problem with fitting adjectives in the strict X-Bar model. Since no recursion is allowed in the basic configuration in (148), that is, none of the X^0, X' or XP nodes can be iterated, sequences of multiple adjectives are not predicted, contrary to the empirical evidence introduced in section 4.2.

Two types of solutions have been proposed to break this deadlock. They differ both in how they address the structural location of the adjective (that is, in

how they implement the categorial properties of adjective-noun combinations and in how they distinguish between arguments and modifiers syntactically), and in how they address the need for recursivity. The traditional approach is to relax the phrase structure system so as to allow recursion and introduce a new constituent type: the adjunct (Baker 1978, Hornstein and Lightfoot 1981, Chomsky 1986). Attributive adjectives and other modifiers are uniformly treated as adjuncts. This aproach is orthogonal to the presence of functional categories[5]. In contrast, the second type of solution, also referred to sometimes as the cartographic approach (Cinque 1994, 2002), capitalizes on the phrase structure system being enriched with functional categories and maintains the no-recursivity constraint. Under this view, adjectives are integrated projections; specifically, they occupy various specifier positions in the functional projection layer dominating the nominal head.

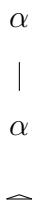
The next two sections will describe these two syntactic models for the representation of adjectives in detail and discuss their implications for adjective orderings.

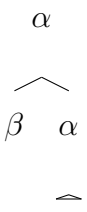
4.3.2 The traditional model generates flexible word order only

The traditional syntactic model for modifying adjectives is to represent them as adjuncts (e.g. Baker 1978; Hornstein and Lightfoot 1981; Chomsky 1986), namely as elements that are base-generated via the operation of adjunction. The properties of this operation, as used in X-Bar theory, were formally discussed in Chomsky (1986, 1992), hence also the name of Chomsky-adjunction. It consists of two steps: the

[5]For discussion on the contrast between lexical and functional categories see section 4.3.3

first step is to create a copy of the node that's the target of adjunction, that is, node α in the diagram in (151a). Consequently, the adjunct does not affect the category of the phrase it attaches to, whether this is taken to refer to bar-level information or part-of-speech information. The second step of the adjunction operation is to attach the adjoined element, node β, as the daughter of the copy-node, the final result being the structure in (151b).

(151) a. 

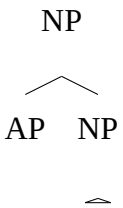
b. 

Depending on the size of the adjunct and the target of adjunction, adjunction structures are generally assumed to come in two guises: (i) XP-to-XP adjunction, where maximal phrases adjoin to other maximal phrases, and (ii) X^0-to-X^0 adjunction, where heads adjoin to other heads[6]. The syntactic model for modifying adjectives is standardly assumed to instantiate the first type of adjunction structure[7]; adjectives are taken to project to a maximal phrase, similarly to other lexical items, which can then freely adjoin to other maximal phrases, such as NP (152a) or some functional phrase in the extended projection of the nominal head (152b).

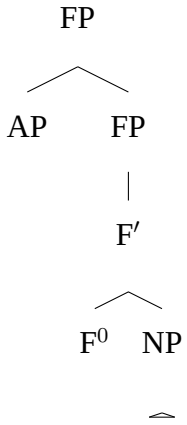
[6]See Chomsky 1986 for arguments against adjunction targeting X′-level nodes. Nevertheless, it is still customary for syntax textbooks to represent modifiers as XP elements adjoined to X′ nodes (eg. Cowper 1992, Haegeman 1994, Carnie 2007).

[7]See however Sadler and Arnold (1994) for an analysis of adjectives as heads adjoined to other heads and Travis (1988) for a similar approach to adverbs.

(152) a.



b.



Representing modifying adjectives as adjuncts has several consequences. First, it sets them apart from the noun's arguments in structural terms. Unlike complements or specifiers, adjuncts preserve the categorial information of the phrase they adjoin to; their mother node and their sister node carrying identical bar-level and part of speech information. Additionally, unlike complements or specifiers, adjuncts are neither s-selected nor c-selected. This ensures that modifying adjectives are optional and that they can attach freely to any maximal category as long as the resulting combination is not semantically deviant.

Thirdly, this model can easily accommodate sequences of multiple adjectives. Since the operation of adjunction is recursive, modifying adjectives can be iterated at will and a single phrase can contain in principle an unlimited number

of them. Moreover, there are no specifications for the order of adjunct attachment so syntactically, multiple adjectives are not constrained to appear in any particular order. The free word order cases documented in section 4.2.2 are therefore, completely expected. In contrast, rigid word order cases like those in section 4.2.1 need a different explanation, as they fall outside the scope of the syntactic model. To illustrate the problem let us consider example (153a), which is a condensed version of (145a) from section 4.2.2.

(153) a. She loves all those orange Oriental ivories. (✓AOR)

b. She loves all those Oriental orange ivories. (not cf. AOR)
(felicitous only if pronounced with comma intonation)

If the order of the two adjectives is reversed and there is no pause between them, as in example (153b), the resulting construction is perceived as very unnatural. The adjunction model produces both orders, so the question is what exactly rules out (153b)? As discussed above, adjunction is a very powerful operation: it can target any maximal/head category, any number of times, and there are no syntactic specifications to constrain the order of attachment. The only way in which a certain adjunction structure can be ruled out is if it lacks a well-formed interpretation. However, there is nothing semantically deviant about (153b). The modified noun phrase in (153b) and that in (153a) have the same interpretation. They both describe a set of ivories that are orange and come from the Orient. This suggests that the traditional model of representing attributive adjectives as adjuncts cannot explain the linear orders introduced in section (4.2.1) since they fall outside the scope of the combinatorial algorithms of both syntax and semantics.

4.3.3 The Cinquean model captures both AOR and its exceptions

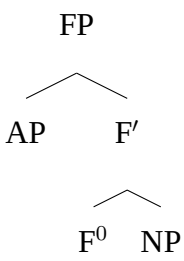
In the 1990s a more restricted version of X-Bar, known as the Linear Correspondence Axiom (LCA) (Kayne 1994), called for an alternative to the traditional model of analyzing modifying adjectives as adjuncts. The new theory argued that in spite of the cross-linguistic variation in headedness (some languages being strictly head-initial, others strictly head-final, and yet others being a combination thereof), there is a unique underlying phrase structure template in which heads consistently take complements on the right and specifiers on the left. The surface variation in word order was due to the presence or absence of movement operations. An important component of this phrase structure model is that it disallowed adjuncts as a category distinct from heads, complements, and specifiers. In particular, it constrained phrases to have at most one specifier, which was generated via left-adjunction, and therefore the notions of specifier and adjunct were collapsed into one. As an increasing number of linguists adhered to LCA and its principles, it became evident that a new syntactic analysis of modifiers was needed.

The opportunity was provided by the rise to prominence of the notion of functional projection. Functional items were shown to be able to project syntactic structure in conformity with the X-Bar format (Stowell 1981, Chomsky 1986, Abney 1987, etc.). Similarly to their lexical counterparts, they select complements and take specifiers. However, this projection no longer corresponds to theta-grid saturation. The relation between functional heads and their corresponding complements or specifiers is purely syntactic. Functional heads are said to *f-select* their

complement (Abney 1987), that is, they uniquely c-select a complement and the categorial properties of the functional phrase are determined by this complement rather than by the functional head (see also Grimshaw and others for the concept of extended functional projection). In addition to the f-selection specification, functional heads are also equipped with functional features and it is these features that license the specifier position. The notion of *f-select* opened new options for analyzing adjective-noun combinations. In particular, it made it possible for adjectives to be analyzed as integrated projections, rather than adjuncts.

Under the new model proposed by Cinque 1994 adjectives are represented as maximal phrases that occur in the specifier position of empty functional heads, as shown in (154)[8].

(154)



This representation solves the issue of the structural location of the adjective in the following way. First, it correctly predicts adjective-noun combinations to have nominal distribution by resorting to the notion of *f-selection*. The *f-select* relation enables the nominal properties of the NP complement to be transferred

[8]For an analysis that also relies on the notion of *f-selection* but where adjectives are represented as functional heads see Abney 1987 and references mentioned therein (p.77). Shortcomings of this proposal are discussed in Radford 1989 1989, Svenonius 1992, Bernstein 1993, Sadler and Arnold 1994, and others.

to the maximal functional projection. Secondly, modifiers are distinguished from arguments (in particular subjects, which also occupy specifier positions) in that the former, but not the latter are base-generated in the functional layer.

But how does this representation account for the strings of multiple adjectives discussed in section 4.2? We've seen that under the traditional model of representing adjectives as adjuncts, sequences of multiple adjectives are the by-product of how the syntactic operation of adjunction is designed; there is in principle no upper bound for the number of times adjunction can apply and the category of the target phrase does not matter, which in addition predicts free word order.

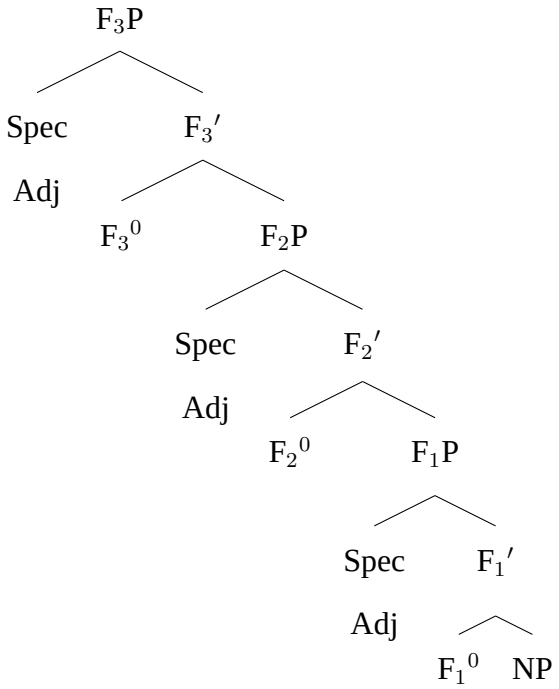
Cinque proposes to mimick the recursivity effect of adjunction by means of lexical specification, thus generating strings of multiple adjectives whose word order is manipulated by the lexicon to syntax mapping[9]. Under the new model of representing attributive adjectives as functional specifiers, the task is delegated to the syntactic operation of *f-selection*, which as mentioned above is a special instance of *c-selection*[10]. All but one of the functional heads that license adjectives in the specifier position are lexically specified to take other adjective-hosting functional

[9]Cinque (1994), which introduces the model of adjectives as functional specifiers, does not explicitly discuss the mechanisms that ensure the strict ordering of adjectives on the assumption that they follow from the syntactic operations that create and order functional projections. The focus is instead on cross-linguistic variation and the similarity that adjectival modifiers share with adverbial modifiers, the latter being extensively discussed in Cinque (1999).

[10]Both types of selection refer to cases where the head requires its XP complement to be of a particular category. In addition, f-selection enables the categorial properties of the phrase to be determined by the complement, rather than the head. As a consequence, f-selection is designed for functional heads, while c-selection is for lexical heads.

phrases as their complements. For example, the functional head F_3 is prespecified to combine with the functional phrase F_2P; in its turn, the functional head F_2 obligatorily selects the phrase F_1P as its complement, and so on.

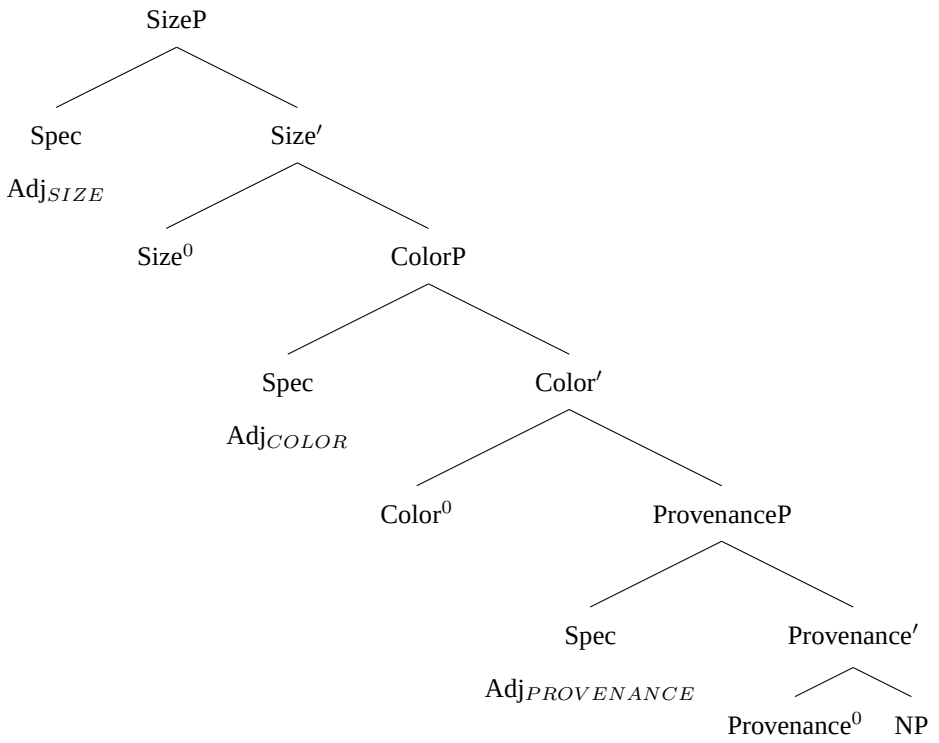
(155)



This creates an extended functional projection above the nominal phrase that can host multiple adjectives in a particular order. The nature of the particular order is determined by the semantics/functional features of each of the functional heads. For example, if the functional head F_1 is endowed with "provenance" features, F_2 with "size" features, and F_3 with "color" features, and their specifiers are constrained to license only adjectives from the corresponding semantic class, the result is a structure that hosts multiple adjectives and whose rigid word order matches up the linear orders introduced in section 4.2. This structure is shown in (156). Consequently, under the Cinquean model we always expect plain adjectives to be

ordered and moreover, that this order will hold cross-linguistically as the hierarchy of functional projections is assumed to be universal, even if not universally lexically realized (eg. Cinque 2002, Rizzi 2004, Kayne 2005).

(156)



Strings of adjectives with non-rigid word order such as those discussed in section 4.2.2 are therefore exceptional. The account proposed by the Cinquean model is that such adjectives are not subject to adjective ordering restrictions because they are outside its scope. Their syntax is different from that of plain adjectives, so they fall into a distinct category.

Adjectives whose behavior resembles that of relative clauses differ from plain adjectives in that they are not adjectival modification cases. These adjectives are reduced relatives (Sproat and Shih 1991, Cinque 2005), which means that they

have more structure than plain adjectives, and belong to the set of clausal modifiers. Since the grammar contains no principle for ordering relative clauses with respect to each other their word order is predicted to be free.

Adjectives that are treated as separate intonational phrases are instances of adjectival modification, but they don't have the syntax of stacked bare adjectives. Multiple adjectives with 'comma' intonation are represented syntactically as coordination structures, and thus they too, are expected to be freely ordered (Sproat and Shih 1991).

Finally, adjectives that bear focus have been claimed to constitute a particular case. They are generated in the same way as plain adjectives but then move to a special syntactic position, which is associated with focus and is situated leftmost inside the DP (Cinque 2005a, 2005c). This produces word orders that are not expected under hierarchies like those in section (4.2.1).

This section has shown that the two models for the representation of adjectives, the traditional model and the Cinquean model, make very different predictions for the ordering of multiple adjectives. The traditional model generates adjectives via the syntactic operation of adjunction and since there are no syntactic constraints on the order of adjunct attachment multiple adjectives are predicted to be freely ordered. Under the Cinquean model adjectives are treated as specifiers of functional heads, whose relative order is uniquely determined, and therefore multiple adjectives are predicted to be rigidly ordered.

An advantage of the Cinquean model is that we know what module of the grammar is responsible for AOR: the lexicon (plus a universal hierarchy of func-

tional projections). Additionally, the Cinquean model can explain the three non-rigid word order exceptions introduced in section 4.2.2 in terms of grammatical mechanisms already in place; each case having been identified with an independently motivated construction, be it a relative clause, a coordination structure, or a focus fronting construction. While this might seem attractive, in the rest of the chapter I will show that any model attempting to explain the free word order cases in an exclusively syntactic manner is insufficient. My argument relies on two new cases of plain adjectives,[11] which contrary to our data generalization so far are freely ordered: operator adjectives and non-definite superlatives (see also Teodorescu 2006). In the next section I will present these data and discuss whether the Cinquean model can be extended to account for them or whether we need a totally different explanation.

4.4 Operator adjectives

4.4.1 A much neglected case of free word order

Operator adjectives like *former* and *alleged* represent another case of non-rigid word order. They cannot be analyzed as Reduced Relatives since they cannot occur in predicative position. Neither do they bear any special intonation in examples like (157 - 159) or (160 - 163). They thus qualify as plain adjectives. However, contrary to our current empirical generalization (see section 4.2), which predicts them to be

[11] In section 4.2.2 plain adjectives were defined as adjectives that do not bear any special intonation and are not reduced relatives.

subject to ordering restrictions, they are freely ordered.

In (157) the operator adjective is *former*, and in (158) it is *alleged*. The adjective *famous* can be replaced with any other non-operator adjective and the same free word order effects will obtain. Example (159) shows that if two operator adjectives are present the ordering constraints are again lifted. No matter how we arrange the two adjectives with respect to each other the sequences that obtain are grammatical.

(157) a. a famous [former] actor

b. a [former] famous actor

(158) a. a famous [alleged] actor

b. an [alleged] famous actor

(159) a. an [alleged] [former] thief

b. a [former] [alleged] thief

Such examples are mentioned sporadically in various grammars. I suggest that this motley crew forms a well-defined class, one that hasn't received much attention in the theoretical literature on adjective orderings. Specifically, what they all have in common is the fact that different orderings give rise to different meanings. (157a) does not allow the consistent continuation *who is now forgotten*, and it refers to someone famous who is no longer an actor. In contrast, (157b) can be consistently continued with *who is now forgotten*, and it refers to someone who is no longer famous or no longer an actor. Similarly, (159a) can be used to describe

someone who is alleged to have formerly been a thief, while (159b) means something else: it characterizes a person who is no longer alleged to be a thief.

Examples (160) through (163) contain similar data from German and Hungarian.

(160) GERMAN (1 operator adjective & 1 non-operator adjective)

a. ein berühmter [zukünftiger] Senator
a famous future senator

b. ein [zukünftiger] berühmter Senator
a future famous senator

(161) GERMAN (2 operator adjectives)

a. ein [mutmaβlicher] [ehemaliger] Spion
a suspected former spy

b. ein [ehemaliger] [mutmaβlicher] Spion
a former suspected spy

(162) HUNGARIAN (1 operator adjective & 1 non-operator adjective)

a. korábbi republikánus szenátor
former Republican senator

b. republikánus korábbi szenátor
Republican former senator

(163) HUNGARIAN (2 operator adjectives)

a. korábbi állítólagos rabló
former alleged thief

b. állítólagos korábbi rabló
alleged former thief

From a semantic point of view, this pattern is explained by the fact that adjectives like *former* and *alleged* are intensional operators (Montague 1970, Partee 2003 and

references therein); namely they map the intensional property of the noun they combine with onto another property which is the semantic value of the Adj+N combination. Their type is <<s,et>,et> and they compose with the denotation of the noun via functional application.

(164) *Former*

a. [former] = λf.[λx.f(now)(x) = 0 but f(t)(x) = 1 for some time t before now]

b. [president] = λx. x is a president

c. [former president] = λx. x is not a president now but x was a president at some time before now

(165) *Alleged*

a. [alleged] = λf.[λx.f(w)(x) = 1 for every possible world w where the relevant allegation is true]

b. [thief] = λx. x is a thief

c. [alleged thief] = λx. x is a thief in every possible world where the relevant allegation is true

The free word order properties of such adjectives, which I will from now on refer to as 'plain operator adjectives', is not predicted by Cinque's original syntactic analysis of AOR (see section 4.3.3). Next I show how we can extend it so as to accomodate these adjectives as well.

4.4.2 A modified Cinquean account for operator adjectives

Under the Cinquean approach plain adjectives are generated as specifiers of dedicated functional projections. Since the order of functional heads is established by the universal grammar and therefore is unique, plain adjectives are predicted to always be strictly ordered. However, we have seen above that this class of adjectives is not homogenous. Plain adjectives actually come in two flavors: operator adjectives and non-operator ones. The first class of adjectives shows free orderings, while the second shows fixed orderings. The second category is exemplified again in (166), where both *tall* and *Russian* are non-operator adjectives and the only possible ordering is the one in (a).

(166) a. tall Russian lawyer

b. # Russian tall lawyer

Besides word order effects, the two sets of plain adjectives also differ in terms of their semantics. Unlike intensional adjectives, whose semantics was given in section (4.4), non-operator ones are much simpler; they denote first order properties (167).

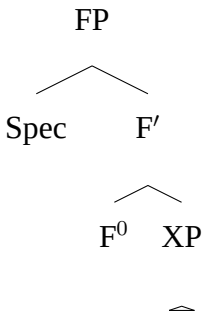
(167) a. [tall] = λx. x is tall

b. [Russian] = λx. x is Russian

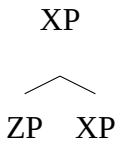
If we keep the basic insight of the Cinquean analysis according to which semantic distinctions are reflected by syntactic distinctions, we can revise the original account in the following way. Let's assume that plain non-operator adjectives are

marked in the lexicon as [- operator], which ensures that they are generated as specifiers of functional heads, as discussed in section 4.3.3. This is shown in (168a). Plain operator adjectives, on the other hand, are marked as [+ operator], which enables them to enter the syntactic derivation as adjuncts, rather than specifiers of functional heads. As a consequence they are predicted to be freely ordered.[12] This is illustrated in (168b).

(168) a. Non-operator adjectives:



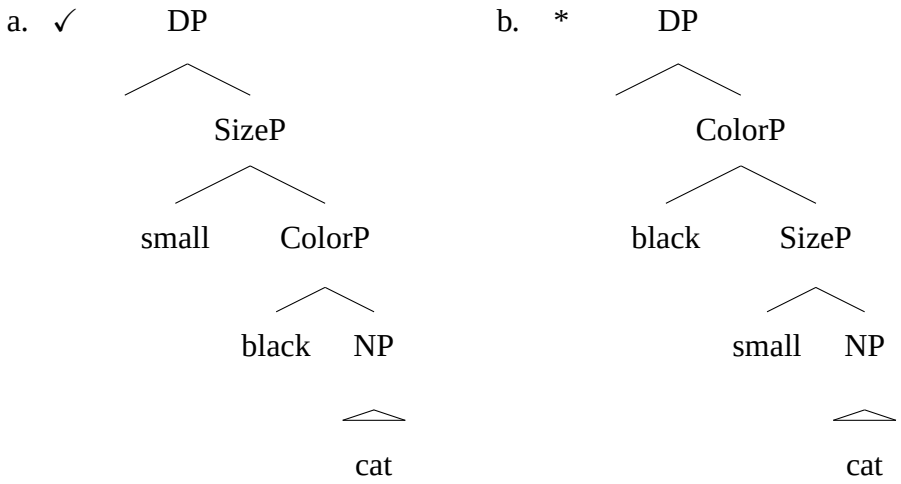
b. Operator adjectives:



(169) is a schematic representation of two adjectives that are rigidly ordered. Each of the adjectives occurs in the Specifier position of its corresponding functional projection and the grammar imposes a certain dominance relation. Specifically, the functional projection for SIZE is pre-specified to dominate the one for COLOR but not vice-versa, which accounts for the marginality of *black small cat* (cf. 169a vs. 169b).

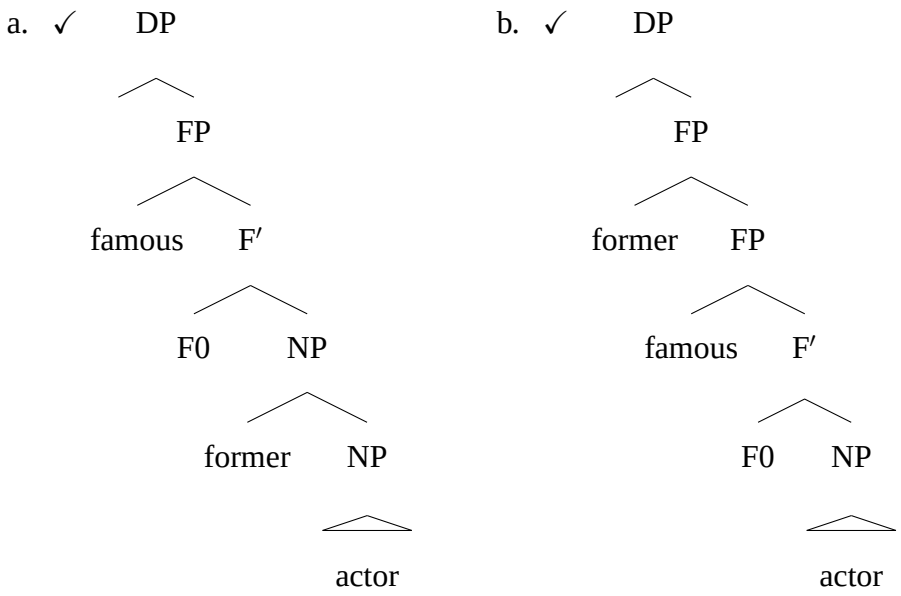
[12]To revise the original Cinquean account in this way we need to decouple it from LCA. This is also the approach taken in Cinque 1994, where certain freely ordered adjectives in Romance are claimed to be reduced relatives and are hence represented as adjuncts.

(169) Sequences without an operator adjective



In (170) we get two possible orderings. While *famous* is confined to the specifier position of some functional projection, *former* is much more flexible. It can adjoin either to a maximal projection below *famous* as in (170a) or above it as in (170b).

(170) Sequences with 1 operator adjective and 1 non-operator adjective



In this section we've seen that operator adjectives are another exception to AOR, one that hasn't received much attention in the theoretical literature, and I showed that similarly to the other exceptions it can receive a syntactic explanation. The solution proposed was to extend the Cinquean model in a way that allows this type of adjectives to be represented as adjuncts. The next section will introduce yet another exception to AOR, one that also consists of plain adjectives, but which cannot be explained away syntactically. It consists of so-called "non-definite" superlatives.

4.5 Non-definite superlatives

4.5.1 A novel case of flexible word order

The term "non-definite superlatives" refers to superlative noun phrases that are preceded by an indefinite article (Herdan and Sharvit 2006). For example, the sentence in (171), which contains a non-definite superlative, is used to mean that there is a unique student in this class who is shorter than all the other students in the class.

(171) This class has [a shortest student]. (Herdan and Sharvit 2006)

Crucially for my argument later on, note that in multiple adjective sequences the presence of the degree morphology has an effect on AOR. In the absence of the superlative morpheme structures with multiple plain non-operator adjectives like *short* and *Italian* are subject to ordering restrictions. This is shown in (172).

(172) a. My class has [a short Italian student].

b. # My class has [an Italian short student].

However, once the superlative morpheme is present, the very same adjectives that were subject to AOR above become freely ordered.

(173) a. My class has [a shortest Italian student].

b. My class has [an Italian shortest student].

Structures with multiple adjectives and a degree operator are thus a fifth class of exceptions to AOR, and they pattern together with operator adjectives in that here too different linear orders convey different meanings. In (173a) the comparison set

over which the superlative morpheme ranges includes only the Italian students in my class and the superlative DP describes the shortest among them. In contrast, in example (173b) the comparison set consists of all the students in my class, not only the Italian ones, and it describes the shortest among all of them; it so happens that he is also Italian. Next I turn to the question of whether they too can receive a syntactic explanation.

4.5.2 The Cinquean model cannot account for them

This section discusses two possible syntactic accounts for the exceptional word order of non-definite superlatives and argues that both of them are problematic.

First, let us explore whether the syntactic analysis provided for operator adjectives in section 4.4 can also account for superlatives. The analysis for operator adjectives relied on lexical specification and derived their flexible word order from the properties of base generated structures. Each of these adjectives would bear a [+operator] label in the lexicon, which ensures that they are represented as adjuncts. This in turn means that there are no selectional constraints that would force them to appear in a particular linear order. In contrast to operator adjectives however, the free word order effect in sequences with multiple adjectives containing a superlative is not due to the lexical properties of the adjectives involved, but rather to the degree morphology. The very same adjectives are ordered in (172) but not in (173). Since the superlative morpheme and the adjective that it attaches to form a morphological and syntactic constituent we can still adopt the lexical specification analysis if we assume that superlatives have a [+ operator] label, while the corresponding

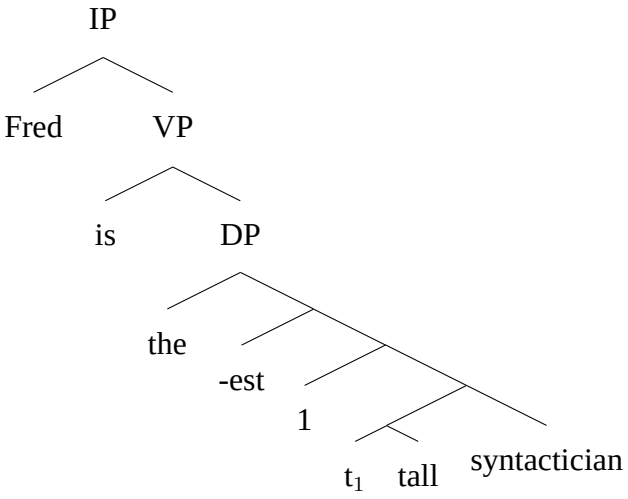
adjectives are lexically marked as [- operator]. This would create a considerable increase in the number of lexical entries associated with each adjective, but could capture the ordering effects.[13]

Note however, that the superlative morpheme scopes independently of its adjectival host (Heim 1999), which suggests that superlatives cannot be derived in the lexicon. To illustrate this, consider the example below.

(174) Among the people at the party, Fred is the tallest syntactician.

(174) can only mean that Fred is tallest among the syntacticians at the party. It cannot mean that he is tallest among the people at the party and he is a syntactician. Under classic assumptions about the representation of scope this means that at the level of LF the superlative morpheme moves to a position from where it takes scope over the adjective as well as the noun, as shown in (175).

(175)



[13]Such an analysis would not extend well to analytic superlatives – where instead of a bound superlative morpheme we have a free superlative morpheme – since we would have to claim that two words actually count as one lexical item.

These interpretation effects could be accounted for without movement if we modified the lexical entry of the superlative morpheme (cf. sections 2.2.2 and 2.4.1) to take an additional noun argument. This would predict that, similarly to operator adjectives, superlatives are always used attributively. However, this is not the case; superlatives can also appear in predicative position.

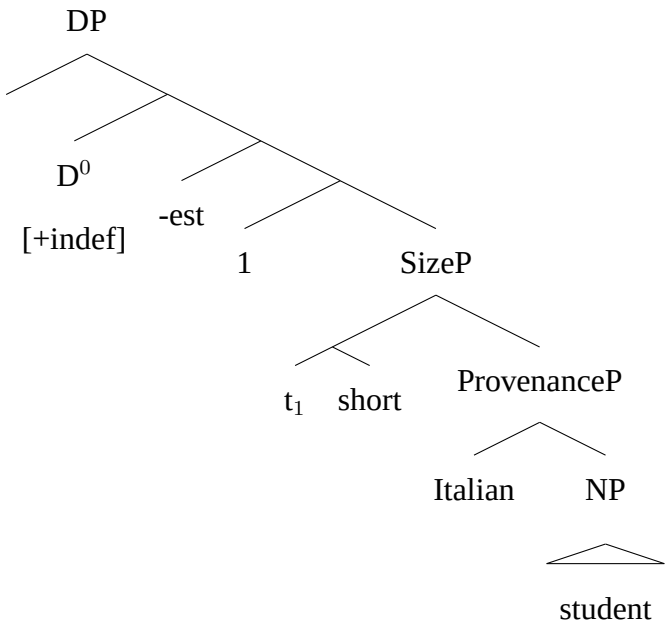
(176) a. Fred is the tallest.

b. Fred looks the tallest.

Therefore, a further classification of the adjectives as we did in the case of operator adjectives cannot account for superlatives, suggesting that the lexical category level is not the right level to look at.

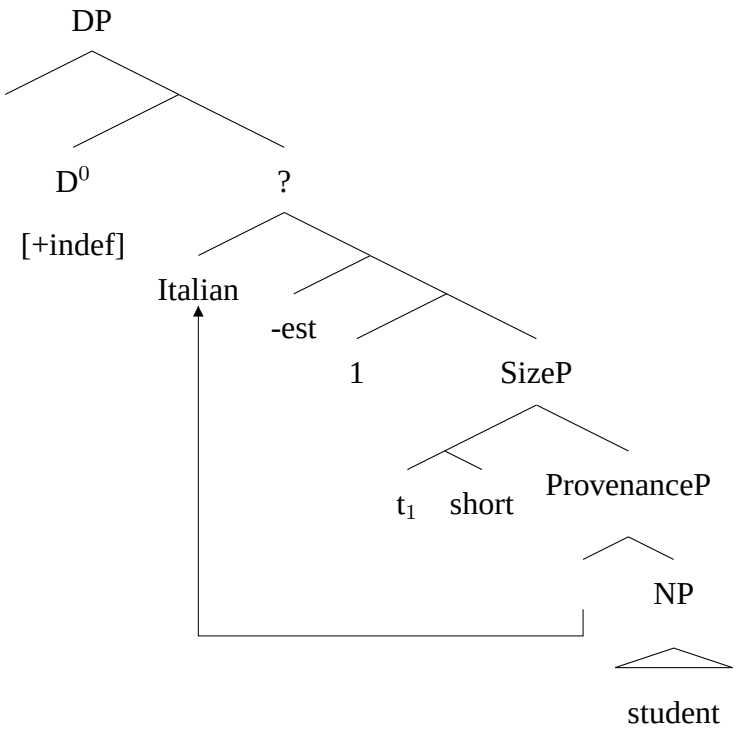
The only other option to provide a syntactic explanation to the exceptional word order of superlatives is to resort to movement, in the way that Cinque did for focus adjectives (section 4.3.3). Under this view both superlatives and their corresponding adjectives are labelled as [-operator] and are generated in the Specifier of dedicated functional projections. This is illustrated in (177), where *shortest* is merged in SpecSize and *Italian* in SpecProvenance. The relative order of the two functional phrases is Size >Provenance, which is the order imposed by the universal grammar.

(177) *a shortest Italian student* (SizeP >ProvenanceP) ✓AOR



This structure produces one of the attested word orders. To capture the reverse (*Italian shortest student*) we would need to move *Italian* to a position above *short*. However, it is not clear what position this should be or what triggers the movement. All we know is that the adjective Italian needs to be outside the scope of the superlative morpheme. Additionally, in order to get the right interpretation the trace left behind should be semantically vacuous since the resulting structure is interpreted as if it were base-generated. A third issue is that the covert movement of *Italian* changes the truth-conditions of the modified noun phrase. We know however, that only quantifier raising is supposed to have that effect.

(178) *an Italian shortest student* (ProvenanceP >SizeP) not cf. AOR



Since there is no independent motivation for deriving the exceptional word order of superlatives via movement and the lexical specification analysis does not work either, I conclude that the free ordering of superlatives cannot be explained syntactically. In what follows I propose a semantic explanation of these cases, which can be extended to operator adjectives as well.

4.6 A new account for exceptional adjective orderings

This section proposes a new account for the exceptions to AOR and discusses its implications for the model of grammar.

4.6.1 A class of semantic exceptions to AOR

Let me start this section by noting that we have now distinguished three types of cases involving modification by plain adjectives:

(179) a. Plain non-operator adjectives

b. Plain operator adjectives

c. Plain adjectives with superlative morphology

The last two classes form a group to the exclusion of the first. On the one hand, we have non-operator adjectives, which are subject to AOR, and on the other hand we have operator adjectives and adjectives with superlative morphology, both of which are freely ordered such that the different orders mean different things. Since there is no syntactic generalization that can capture this grouping, I suggest looking more closely at the interaction between linear order and the compositional semantics of multiple adjective sequences.

First, plain non-operator adjectives: they denote denote functions of type <e,t>, and they compose with the noun they modify via predicate modification (Heim and Kratzer (1998)). Since the operation of intersection is commutative, the linear order of non-operator adjectives will have no effect on the interpretation of these sequences. Both *tall Russian lawyer* and *Russian tall lawyer* are predicted to denote (181). In other words, reversing the order of these adjectives preserves the meaning. Different linear orders do not yield different semantic interpretations in the case of non-operator adjectives.

(180) a. [tall] = λx. x is a tall

b. [Russian] = λx. x is Russian

c. [lawyer] = λx. x is a lawyer

(181) λx. x is tall and x is Russian and x is a lawyer

In contrast, plain operator adjectives have a non-intersective semantics (cf. discussion in section 4.4), and therefore we always expect scope effects. The surface position of these adjectives determines the amount of material that they scope over. For example, in (182a) *former* operates on the noun meaning, while in (182b) it operates on the noun + adjective meaning. Consequently, different linear orders correspond to different interpretations.

(182) a. a famous former [actor]

b. a former [famous actor]

Superlative modifiers too, depart from plain non-operator adjectives in that they also have non-intersective interpretations. A phrase like *shortest student* does not characterize the set of students who are shorter than anyone else but the set of students who are shorter than all other students, which means that *-est* needs to takes scope over both the adjective and the modified noun (Heim 1999). This is shown in (183).

(183) a. shortest student: [-est 1 [[t_1 short] student]]

b. [shortest student] = λx. x is the student shorter than all other students

Thus whenever the superlative morpheme is present different linear orders mean different things, just like with operator adjectives, and this is illustrated in

(184). In (184a), *-est* takes scope over 'short Italian student', while in (184) it only takes scope over 'short student', producing the meaning differences mentioned in section (4.5).

(184) a. shortest Italian student: [-est 1 [[t_1 short] [Italian student]]]

b. Italian shortest student: [Italian [-est 1 [[t_1 short] student]]]

The full picture on how plain adjectives behave is summarized in (185).

(185) a. Plain non-operator adjectives - fixed orderings and same meaning

b. Plain operator adjectives - free orderings and different meanings

c. Plain adjectives and *-est* - free orderings and different meanings

This pattern suggests that there is a general semantic constraint on AOR according to which ordering restrictions do not choose between structures that are truth-conditionally distinct. It may be that not all semantically equivalent structures are rigidly ordered but it is only these that can be.[14] Under this view, if two sequences of adjectives have different denotations, the syntax will allow both orders. This is schematically illustrated in (186a). Conversely, if only one ordering is possible the prediction is that the two sequences are semantically equivalent and that the ordering attested is the one imposed by the syntax (186b).

(186) a. if [A_1 A_2 N] $\neq$ [A_2 A_1 N] $\rightarrow$ AOR do not apply

b. if [A_1 A_2 N] = [A_2 A_1 N] $\rightarrow$ AOR can apply

(where equivalence is defined as truth-conditional identity)

[14]For instance, it is possible that the syntactic component produces a particular adjective ordering sequence but the phonological component re-arranges it based on rythm constraints.

4.6.2 Definite superlatives and Strawson-identity

This section discusses definite superlatives and introduces a refinement of the adjective ordering generalization presented so far.

In contrast to the non-definite superlative constructions presented in section 4.5, definite ones do not allow free word order:

(187) a. The dean praised [the shortest Italian student].

b. # The dean praised [the Italian shortest student].

Given the semantic constraint on AOR that I described, the prediction is that the (a) and (b) cases in (187) are semantically equivalent. The claim however, cannot be tested by appealing to speaker judgments since the second case is ungrammatical. Therefore let us examine what the semantics of superlatives predicts about the meanings of the multiple adjective sequences in (187).

First let us consider the simple case in (188), where only one adjective is present. Here, the superlative noun phrase describes the boy who is taller than any other boys.

(188) a. Mihai is the tallest boy.

b. [tallest boy] = λx. x is the boy taller than all the other boys

By extension we expect to get the following denotations for the multiple adjective sequences in (187):

(189) a. [shortest Italian student] = λx. x is Italian and x is shortest among the Italian students

b. [Italian shortest student] = λx. x is Italian and x is shortest among all the students

These denotations are semantically distinct, and this can be illustrated with the following scenario. Suppose that the contextually-relevant set of comparison in these cases is some international school, and that Mihai, Carlo, and several other students of various nationalities study at the school. Mihai is Romanian and Carlo is Italian. Suppose moreover that:

(190) a. There is no other student in the school shorter than (or of equal height as) Mihai; and

b. There is no other Italian student in the school shorter than (or of equal height as) Carlo.

In this scenario the sequence *shortest Italian student* characterizes Carlo, while *Italian shortest student* doesn't describe anyone in the school since the shortest student among all is Mihai but he is not Italian. At first sight, this seems to contradict our prediction that the two multiple adjective sequences are semantically equivalent. However, a slight modification of (186) will make it hold again.

First, it is possible that identity is not actually checked at the level of the noun phrase, but rather at the level of the determiner phrase. Secondly, it may be the case that when identity is checked this is done under the assumption that both determiner phrases refer, which implies that the relevant notion is not truth-condition distinctiveness but rather Strawson identity. Strawson identity differs from truth-conditional identity in that the presuppositions of the determiner phrase containing

the superlative need to be satisfied (von Fintel 1999).[15].

Extending this to the two sequences of multiple adjectives in (187) we again predict them to be semantically equivalent. The noun phrases *Italian shortest student* and *shortest Italian student* have different truth-conditions, but when they combine with the definite article they become Strawson identical. In contrast to the indefinite determiner, which asserts existence, the definite one presupposes it. This means that whenever the DP *the Italian shortest student* refers, it refers to the same person that the DP *the shortest Italian student* does. In our scenario this is Carlo.

With our initial proposal refined as in (191) we can now account for why definite superlatives are rigidly ordered while non-definite ones aren't.

(191) a. if [Det A_1 A_2 N] $\neq$ [Det A_2 A_1 N] $\rightarrow$ AOR do not apply

b. if [Det A_1 A_2 N] = [Det A_2 A_1 N] $\rightarrow$ AOR can apply

(where equivalence is defined as Strawson identity)

[15]The notion of Strawson identity is modelled after von Fintel (1999) who defines Strawson validity as a type of validity where the presuppositions of the statements in the premise must satisfied (1)

(1) *Strawson-Validity*

An inference p_1, ..., p_n $\therefore$ q is Strawson-valid iff

the inference p_1, ..., p_n, S $\therefore$ q is (classically) valid.

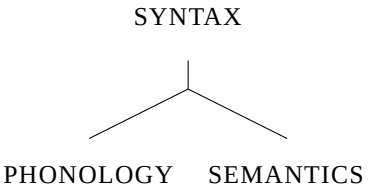
Where S is a premise stating that the presuppositions of all the statements involved are satisfied.

4.6.3 Discussion and implications for the model of grammar

The generalizations discussed above show that AOR are sensitive to semantics: not just to the lexical semantics of individual adjectives, as previously thought, but also to the semantics of the whole determiner phrase. Under the assumption that the rigid word order of adjectives is a syntactic phenomenon, as proposed by a long line of authors (Vendler 1968, Bernstein 1993, Cinque 1994, Sadler and Arnold 1994, Scott 2002 Laenzlinger 2005, etc.), this suggests that we need a model of grammar where the syntactic component imposes ordering restrictions only on semantically equivalent structures. In particular, we would need to evaluate not just between syntactic derivations, but also between syntactic structures with their associated semantic interpretations.

Under many contemporary approaches to grammar (e.g. Chomsky 1981, 1995) however, such an interaction is unexpected since the relationship between syntax and semantics is seen as unidirectional.

(192) Architecture of the grammar (e.g. Chomsky 1981, 1995, etc.)



The only type of semantic information that the syntactic component refers to is lexical information. It refers to it in creating syntactic derivations which are then sent to the semantic component for interpretation. The semantic component computes and evaluates their compositional meaning but communicates nothing back to the

syntactic module. The widely accepted view is that as long as the object produced by the syntactic system is well-formed, its interpretation is irrelevant to syntactic operations. The analysis for the ordering of multiple adjectives proposed here challenges this position and suggests that the current model of grammar needs to be modified.

A similar proposal was made in Fox (2000) for a different domain, namely quantificational structures. Fox argues that a given truth-conditional interpretation is achieved with "no more effort than necessary" and that covert movement operations like QR-ing can only apply if they have a semantic effect. In other words, covert movement operations are subject to economy conditions that operate on syntactic structures and make reference to facts about the interpretation of these structures.In the case discussed by Fox, the grammar compares the truth-conditions of structures where something has moved. In contrast, in the case of AOR the grammar has to compare the truth-conditions of base generated structures. This suggests that these two findings might be two aspects of a more general phenomenon.

4.7 Summary

This chapter discussed the word order variation in multiple adjective sequences and introduced two new cases of flexible word order. I argued that this class of exceptions can not be analyzed syntactically in the way that other cases of flexible word order have been analyzed in the literature and proposed a semantic explanation. This produced a new generalization for adjective orderings according to which only truth-conditionally equivalent sequences of multiple adjectives can be rigidly

ordered. The new generalization raises challenges for current grammar models that assume that the relation between the syntactic and the (compositional) semantic module is unidirectional.

Chapter 5

Conclusions and further research

This dissertation has made two major claims about the interpretation and syntax of nominal modification. The first is that:

(193) **Superlative modification**

There is no ambiguity in the semantics of superlative noun phrases. The variation in the interpretation of superlatives is purely pragmatic, each superlative interpretation being a reflex of the properties of the surrounding discourse.

In contrast to previous approaches I have argued that superlative interpretations should not be classfied into two different categories: absolute readings versus comparative readings since there are no essential differences between them. This means that the syntax of superlative modification is to be kept simple: there is no covert movement of the superlative quantifier, as suggested by Szabolcsi 1986 and Heim 1999, and the head noun does not bear any syntactic indices, as claimed in

Farkas and Kiss 2000. The saliency theory that I proposed analyzes all comparative readings as a restricted version of the absolute reading where the comparison set is narrowed down by a saliency function that associates salient individuals with individuals that have the property P, where P is determined by the adjective (and noun) that the superlative takes scope over.

This provides a uniform account of the entire range of superlative interpretations, not just of the variation among types of absolute readings, and can capture all the classic comparative readings that previous analyses derive. These are cases where the superlative associates with a focus/wh-phrase and the comparison set is restricted by the predicate of the sentence. In addition, the saliency theory can generate a number of readings that are left unexplained under previous analyses.

The discussion was based on data from English, Hungarian, and Romanian, but the saliency theory predicts that we find similar variation in the interpretation of superlatives cross-linguistically. Specifically, we expect all languages to have a narrow scope interpretation of the superlative quantifier and that the properties of the surrounding discourse will create a variety of context-dependent meanings. In some languages discourse may affect the interpretation of superlatives in particular ways, but such variation would be minimal. Further research into the typology of degree quantifiers needs to establish whether there are any languages where the superlative quantifier takes wide scope.

The second claim about nominal modification made in this dissertation concerns the ordering properties of multiple adjective strings. Contra previous analyses I have argued that:

(194) **Stacked modification**

The semantic factors that influence word order in stacked modification structures with neutral intonation are not restricted to the lexical semantics of individual adjectives. The interpretation of the whole determiner phrase also has an effect on the word order of such structures.

I introduced two types of evidence in support of this claim. First, I showed that stacked modification structures with an operator adjective or a superlative are not subject to linearizing constraints and argued that the free word order of these adjectives cannot be explained in terms of their lexical meaning. The only way in which we can predict which strings of adjectives are going to be freely ordered and which aren't is by looking at the truth-conditions of the whole nominal phrase. Secondly, I showed that the order of multiple adjective strings is also affected by the presuppositions of the article immediately preceding the modified noun phrase. The definite article, which presupposes existence, imposes rigid word order; the indefinite one, which only asserts existence, allows the multiple adjectives in its scope to be freely ordered.

These results have consequences for how the architecture of grammar should be conceived. In particular, they suggest that we need a model of grammar that can evaluate not only between syntactic structures, but also between syntactic structures with their associated interpretations. The modular system of the generative grammar framework does not easily allow such modifications. The only alternative explanation compatible with this framework is to argue that multiple adjectives are freely ordered (which from the syntactic point of view would mean that they're all

represented as adjuncts) and that the rigid word order cases are not a grammatical phenomenon, but rather the reflex of a processing constraint. Analyzing rigid word order among multiple adjectives as a processing constraint is a line of thought that was quite popular in the psycholinguistic literature of the 1970s (Martin 1969a, 1969b, 1970; Martin and Ferb 1973; Martin Richards 1975). Following the early work of Bloomfield 1933, Whorf 1956, and Ziff 1960 these authors describe the rigid word order of adjectives not in terms of semantic classes of adjectives, but rather in terms of a gradient principle according to which adjectives expressing "concrete", "inherent" properties appear closer to the noun while those expressing "subjective", "non-inherent" properties appear further away. As discussed in section 4.2 this principle orders adjectives with respect to the head noun; languages with post-nominal adjectives being the mirror image of languages with pre-nominal adjectives. This has been considered as evidence that we process adjectives not in a temporal or left-to-right order, but in terms of their proximity to the noun. The linearizing constraints reflect our need to identify the object(s) that the noun describes as soon as possible.

Adopting a processing account – whether along the these lines, or in a different form – is however, not as straighforward as it might seem and there is more research that needs to be done. Here is a sample of questions that come to mind: (i) If adjective orderings are the result of a processing constraint, why does the notion of hierarchy seem to matter? (ii) If these processing constraints impose ordering restrictions on adjective strings that are semantically equivalent, why don't we also see ordering effects in coordination structures? (iii) Why are focused adjectives not

subject to the same processing constraints?

One implication of the nominal modification studies in this dissertation is that the role played by determiners appears in a different light. Determiners are typically treated as syntactic heads whose semantic contribution is independent of the rest of the nominal phrase. The interpretation of noun modification shows that there is more interaction between the determiner and the rest of the nominal phrase than envisaged by previous theories.

Bibliography

Abney, Steven. 1987. The English Noun Phrase in its Sentential Aspect. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Massachusetts. Distributed by MIT Working Papers in Linguistics.

Alexiadou, Artemis. 2001. Adjective Syntax and Noun Raising: Word Order Asymmetries in the DP as the Result of Adjective Distribution. *Studia Linguistica* 55:217–248.

Alexiadou, Artemis, and Chris Wilder. 1998. Adjectival Modification and Multiple Determiners. In *Possessors, Predicates and Movement in the Determiner Phrase*, ed. Artemis Alexiadou and Chris Wilder, number 22 in Linguistik Aktuell/Linguistics Today, 303–332. Amsterdam/Philadelphia: John Benjamins.

Bache, Carl. 1978. *The Order of Premodifying Adjectives in Present-day English*. Odense: Odense University Press.

Baker, C.L., ed. 1978. *Introduction to Generative-Transformational Syntax*. Englewood Cliffs, New Jersey: Prentice Hall.

Bartsch, Renate, and Theo Vennemann. 1972. The Grammar of Relative Adjectives and Comparison. *Linguistische Berichte* 20:19–32.

Bernstein, Judy B. 1993. Topics in the Syntax of Nominal Structure Across Romance. Doctoral Dissertation, The City University of New York, New York.

Biber, Douglas, Stig Johansson, Geoffrey Leech, Susan Conrad, and Edward Finegan. 1999. *Longman Grammar of Spoken and Written English*. Harlow, Essex: Longman.

Bloomfield, Leonard. 1933. *Language*. New York: Henry Holt.

Bresnan, Joan. 1973. The Syntax of the Comparative Clause Construction in English. *Linguistic Inquiry* 4:275–343.

Büring, Daniel. 1997. *The Meaning of Topic and Focus: the 59th Street Bridge Accent*. London: Routledge.

Büring, Daniel. 2003. On D-trees, Beans, and B-accents. *Linguistics and Philosophy* 26:511–545.

Carnie, Andrew. 2007. *Syntax. A Generative Introduction*. Cambridge, MA: Blackwell Publishing.

Chafe, Wallace. 1976. Givenness, Contrastiveness, Definiteness, Subjects, Topics, and Point of View. In *Subject and topic*, ed. Charles N. Li, 25–55. New York: Academic Press.

Chomsky, Noam. 1970. Remarks on Nominalization. In *Readings in English Transformational Grammar*, ed. Roderick A. Jacobs and Peter S. Rosenbaum. Waltham: Ginn and Co.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam. 1986. *Barriers*. Number 13 in Linguistic Inquiry Monographs. Cambridge, MA: MIT Press.

Chomsky, Noam. 1995. *The Minimalist Program*. Number 28 in Studies in Linguistics. Cambridge, Massachusetts: MIT Press.

Cinque, Guglielmo. 1994. On the Evidence for Partial N-Movement in the Romance DP. In *Paths Towards Universal Grammar. Studies in Honor of Richard S. Kayne*, ed. Guglielmo Cinque, Jan Koster, Jean-Yves Pollock, Luigi Rizzi, and Raffaella Zanuttini, Georgetown Studies in Romance Linguistics, 85–110. Washington, DC: Georgetwon University Press.

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads: A Cross-Linguistic Perspective*. Oxford Studies in Comparative Syntax. Oxford: Oxford University Press.

Cinque, Guglielmo. 2002. Mapping Functional Sstructure: A Project. In *Functional structure in DP and IP*, ed. Guglielmo Cinque, 3–11. Oxford University Press.

Cinque, Guglielmo. 2005a. Deriving Greenberg's Universal 20 and Its Exceptions. *Linguistic Inquiry* 36:315–332.

Cinque, Guglielmo. 2005b. Internal syntax of DP (with special reference to adjectives and relative clauses). Lecture Notes, LSA Institute, MIT.

Cinque, Guglielmo. 2005c. The Dual Source of Adjectives and Phrasal Movement in the Romance DP. Manuscript, University of Venice.

Cowper, Elizabeth. 1992. *A Concise Introduction to Syntactic Theory*. Chicago, IL: The University of Chicago.

Cresswell, M. J. 1976. The Semantics of Degree. In *Montague grammar*, ed. Barbara Partee, 261–292. New York, NY: Academic Press.

Danks, J.H., and M.A. Schwenk. 1972. Prenominal Adjective Order and Communication Context. *Journal of Verbal Learning and Verbal Behavior* 11:183–187.

Danks, J.H., and M.A. Schwenk. 1974. Comprehension of Prenominal Adjective Orders. *Memory and Cognition* 2:34–38.

Dixon, R.M.W. 1982. *Where Have all the Adjectives Gone? And Other Essays in Semantics and Syntax*. Berlin: Mouton.

Farkas, Donka, and Katalin Kiss. 2000. On the Comparative and Absolute Readings of Superlatives. *Natural Language and Linguistic Theory* 18:417–455.

von Fintel, Kai. 1994. Restrictions on Quantifier Domains. Doctoral Dissertation, University of Massachusetts-Amherst, Amherst, Massachusetts. Distributed by GLSA.

von Fintel, Kai. 1999. NPI Licensing, Strawson Entailment and Context-dependency. *Journal of Semantics* 16:97–148.

Fox, Danny. 2000. *Economy and Semantic Interpretation*. Number 35 in Linguistic Inquiry Monographs. Cambridge, Massachusetts: MIT Press.

Fukui, Naoki, and Margaret Speas. 1986. Specifiers and Projection. *MIT Working Papers in Linguistics* 8:128–172.

Gawron, Jean Mark. 1995. Comparatives, Superlatives, and Resolution. *Linguistics and Philosophy* 18:333–380.

Griffin, Zenzi M. 2004. Why Look? Reasons for Eye Movements Related to Language Production. In *The interface of language, vision, and action: Eye movements and the visual world*, ed. J. Henderson and F. Ferreira, 213–247. New York: Taylor and Francis.

Groenendijk, J., M. Stokhof, and F. Veltman. 1995. Coreference and Contextually Restricted Quantification. In *Proceedings of SALT V*, 112–129.

Gundel, Jeannette K., Nancy Hedberg, and Ron Zacharski. 1993. Cognitive Status and the Form of Referring Expressions in Discourse. *Language* 69:274–307.

Gutierrez-Rexach, Javier. 2006. Superlative Quantifiers and the Dynamics of Context-dependence. In *Where Semantics Meets Pragmatics*, ed. Klaus von Heusinger and Ken Turner, 237–266. Oxford/New York: Elsevier Science.

Hackl, Martin. 2000. Comparative Quantifiers. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Massachusetts.

Hackl, Martin. 2001. Comparative Quantifiers and Plural Predication. In *Proceedings of WCCFL 20*, ed. K. Megerdoomina and L.A Bar-el, 237–247. Somerville, MA: Cascadilla Press.

Hackl, Martin. 2009. On the Grammar and Processing of Proportional Quantifiers: most versus more than half. *Natural Language Semantics* 17:63–98.

Haegeman, Liliane. 1994. *Introduction to Government and Binding Theory*. Cambridge, Massachusetts: Blackwell Publishing. 2nd edition.

Halliday, M.A.K. 1994. *An Introduction to Functional Grammar*. Reading, MA: London: Edward Arnold. 2nd edition.

Heim, Irene. 1985. Notes on Comparatives and Related Matters. Manuscript, University of Texas at Austin.

Heim, Irene. 1999. Notes on Superlatives. Manuscript, Massachusetts Institute of Technology.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Number 13 in Blackwell Textbooks in Linguistics. Oxford, England: Blackwell.

Herdan, Simona, and Yael Sharvit. 2006. Definite and Non-definite Superlatives and NPI Licensing. *Syntax* 9:1–31.

Hetzron, Robert. 1978. On the Relative Order of Adjectives. In *Language Universals*, ed. H. Seiler, 165–184. Tuebingen: Gunter Narr Verlag.

Hill, Archibald A. 1958. *Introduction to Linguistic Structures: from Sound to Sentence in English*. New York: Harcourt Brace.

Hornstein, Norbert, and David Lightfoot. 1981. Introduction. In *Explanation in Linguistics*, ed. Norbert Hornstein and David Lightfoot, 9–31. London and New York: Longman.

Hornstein, Norbert, and Jairo Nunes. 2008. Adjunction, Labeling, And Bare Phrase Structure. *Biolinguistics* 2:57–86.

Huddleston, R. D., G. K. Pullum, and L. Bauer. 2002. *The Cambridge Grammar of the English Language*. Cambridge University Press.

Jackendoff, R. 1977. *X′ Syntax: A Study of Phrase Structure*. Cambridge, MA: MIT Press.

Jackendoff, Ray S. 1972. Semantic Interpretation in Generative Grammar. In *Studies in linguistics*, 2. Cambridge, Massachusetts: MIT Press.

Kamp, Hans. 1975. Two Theories of Adjectives. In *Formal Semantics of Natural Language*, ed. Edward Keenan, 123–155. Cambridge, UK: Cambridge University Press.

Kayne, R. 1984. *Connectedness and Binary Branching*. Dordrecht: Foris.

Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Number 25 in Linguistic Inquiry Monographs. Cambridge, MA: MIT Press.

Kemmerer, D., C. Weber-Fox, K. Price, C. Zdanczyk, and H. Way. 2007. Big Brown Dog or Brown Big Dog? An Electrophysiological Study of Semantic Constraints on Prenominal Adjective Order. *Brain and Language* 100:238–256.

Kennedy, Christopher. 1997. Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison. Doctoral Dissertation, University of California, Santa Cruz, Santa Cruz, California. Published in 1999 by Garland in the Outstanding Dissertations in Linguistics series.

Klein, Ewan. 1980. A Semantics for Positive and Comparative Adjectives. *Linguistics and Philosophy* 4:1–45.

Kratzer, Angelika. 1981. The notional category of Modality. In *Words, worlds, and contexts: new approaches in word semantics*, ed. Hans-Jürgen Eikmeyer and Hannes Rieser, number 6 in Research in text theory, 38–74. Berlin: de Gruyter.

Krifka, Manfred. 1989. Nominal Reference, Temporal Constitution and Quantification in Event Semantics. *Semantics and contextual expression* 11:75–115.

Laenzlinger, Christopher. 2005. French Adjective Ordering: Perspectives on DP-internal Movement Types. *Lingua* 115:645–689.

Lance, D.M. 1968. Sequential Ordering in Prenominal Modifiers in English: A Critical Review. Doctoral Dissertation, University of Texas at Austin.

Link, Godehard. 1983. The Logical Analysis of Plurals and Mass Terms: a Lattice-theoretical Approach. In *Meaning, use and the interpretation of language*, ed.

Christoph Schwarze Rainer Bauerle and Arnim von Stechow, 303–323. Berlin: de Gruyter.

Martin, J. E. 1969a. Semantic Determinants of Preferred Adjective Order. *Journal of Verbal Learning and Verbal Behavior* 8:471–480.

Martin, J. E. 1969b. Some Competence-Process Relationships in Noun Phrases with Prenominal and Postnominal Adjectives. *Journal of Verbal Learning and Verbal Behavior* 8:697–704.

Martin, J. E., and T. E. Ferb. 1973. Contextual Factors in Preferred Adjective Ordering. *Lingua* 32:75–81.

Martin, J.E. 1970. Adjective Order and Juncture. *Journal of Verbal Learning and Verbal Behavior* 9:379–384.

Martin Richards, Meredith. 1975. The Pragmatic Communication Rule of Adjective Ordering: A Critique. *American Journal of Psychology* 88:201–215.

Matushansky, Ora. 2002. Movement of degree/degree of movement. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Massachusetts.

Montague, Richard. 1970. English as a Formal Language. In *Linguaggi nella Societa e nella Tecnica*, ed. Bruno Visentini et al., 189–224. Milan: Edizioni di Comunita. Reprinted in Montague 1974, 222-246.

Partee, Barbara. 2003. Are There Privative Adjectives? Manuscript, University of Massachusetts, Amherst.

Paul, Waltraud. 2005. Adjectival Modification in Madarin Chinese and Related Issues. *Linguistics* 43:757–793.

Plank, Frans. 2007. Extent and Limits of Linguistic Diversity as the Remit of Typology but through Constraints on what is Diversity Limited? *Linguistic Typology* 11:1:43–68.

Prince, Ellen F. 1981. Toward a taxonomy of given-new information. *Radical pragmatics* 223–255.

Quirk, R., S. Greenbaum, G. Leech, and Jan Svartvik. 1972. *A Grammar of Contemporary English*. London and New York: Longman.

Radford, Andrew. 1988. *Transformational Grammar. A First Course*. Cambridge University Press.

Radford, Andrew. 1989. The Syntax of Attributive Adjectives in English and the Problems of Inheritance. http://privatewww.essex.ac.uk/ radford/PapersPublications/adjectives.htm.

Rooth, Mats. 1985. Association with Focus. Doctoral Dissertation, University of Massachusetts-Amherst, Amherst, Massachusetts. Distributed by GLSA.

Rooth, Mats. 1992. A Theory of Focus Interpretation. *Natural Language Semantics* 1:75–116.

Ross, John Robert. 1964. A Partial Grammar of English Superlatives. Master's thesis, University of Pennsylvania.

Sadler, Louisa, and Douglas J. Arnold. 1994. Prenominal Adjectives and the Phrasal/Lexical Distinction. *Journal of Linguistics* 30:187–226.

Schwager, Magdalena. 2009. Speaking of Qualities. Paper presented at SALT 19.

Schwarz, Bernhard. 2004a. Interpreting Superlatives. Handout of talk given at University of Massachussetts, Amherst, December 6.

Schwarz, Bernhard. 2004b. Superlative Noun Phrases. Lecture notes, University of Texas at Austin.

Schwarz, Bernhard. 2005. Modal Superlatives. In *Proceedings of SALT XV*, ed. Effi Georgala and Jonathan Howell. Cornell University, Ithaca, NY: Cornell Linguistics Club.

Scott, Gary. 2002. The Syntax and Semantics of Adjectival Modification. Doctoral Dissertation, University of London.

Seuren, P. A. 1973. The Comparative. In *Generative grammar in europe*, ed. F. Kiefer and N. Ruwet. Dordrecht: Riedel.

Sharvit, Yael, and Penka Stateva. 2000. Against Long Movement of the Superlative Operator. In *Proceedings of SALT X*, ed. Brendan Jackson and Tanya Matthews, 185–202. Ythaca, NY: Cornell University.

Sharvit, Yael, and Penka Stateva. 2002. Superlative Expressions, Context, and Focus. *Linguistics and Philosophy* 25:453–504.

Sperber, Dan, and Deirdre Wilson. 1986. *Relevance: Communication and Cognition*. Harvard University Press.

Sproat, Richard, and Chilin Shih. 1991. The Cross-linguistic Distribution of Adjective Ordering Restrictions. In *Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda*, ed. C. Georgopoulos and R. Ishihara, 565–593. Dordrecht: Kluwer Academic Publishers.

Stanley, Jason, and Zoltan Gendler Szabo. 2000. On Quantifier Domain Restriction. *Mind and Language* 15:219–261.

Stateva, Penka. 2005. Presuppositions in Superlatives. Paper posted on the Semantics Archive.

Stateva, Penka T. 2002. How Different are Different Degree Constructions? Doctoral Dissertation, University of Connecticut, Storrs, Connecticut.

Stowell, Tim. 1981. The Origins of Phrase Structure. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Massachusetts.

Svenonius, Peter. 1992. The Extended Projection of N: Identifying the Head of the Noun Phrase. *Working Papers in Scandinavian Syntax* 49:95–121.

Szabo, Zoltan. 2001. Adjectives in Context. *Perspectives on Semantics, Pragmatics and Discourse: A Festschrift for Ferenc Kiefer* 119–46.

Szabolcsi, Anna. 1986. Comparative Superlatives. In *Papers in Theoretical Linguistics*, ed. Naoki Fukui, Tova R. Rapoport, and Elizabeth Sagey, number 8 in MIT Working Papers in Linguistics, 245–265. Cambridge, MA: MITWPL.

Teodorescu, Alexandra. 2006. Adjective Ordering Restrictions Revisited. In *Proceedings of WCCFL 25*. Somerville, MA: Cascadilla Project.

Teodorescu, Alexandra. 2007. Attributive Superlatives in Romanian. In *Pitar Mos: A Building with a View. Papers in Honor of Alexandra Cornilescu*, ed. L. Avram G. Alboiu, A. Avram and D. Isac. Bucharest, Romania: Bucharest University Press.

Teyssier, J. 1968. Notes on the Syntax of the Adjective in Modern English. *Lingua* 20:225–249.

Travis, Lisa. 1988. The Syntax of Adverbs. *McGill Working Papers in Linguistics. Special Issue on Comparative Germanic Syntax* 280–310.

Vandelanotte, L. 2002. Prenominal Adjectives in English: Structures and Ordering. *Folia linguistica* 36:219–259.

Vendler, Z. 1963. *The Transformational Grammar of English Adjectives*. University of Pennsylvania.

Vendler, Zeno. 1968. *Adjectives and Nominalizations*. The Hague-Paris: Mouton.

Whorf, Benjamin Lee. 1956. *Language, Thought, and Reality*. New York: John Wiley & Sons, and The Technology Press of M.I.T.

Wulff, Stefanie. 2003. A Multifactorial Corpus Analysis of Adjective Order in English. *International Journal of Corpus Linguistics* 8:245–282.

Ziff, P. 1960. *Semantic Analysis*. Cornell University Press Ithaca, NY.

Vita

Viorica Alexandra Teodorescu was born in Bucharest, Romania, the daughter of Tasiţa and Viorel Teodorescu. She obtained her General Baccalaureate in sciences from the 'Nicolae Grigorescu' High-School in Câmpina in 1995 and went on to attend the University of Bucharest double-majoring in English and French. She received her B.A. in 2000 and her M.A. in Theoretical Linguistics in 2001. In the fall of 2001 she enrolled in the Ph.D. program in Linguistics at The University of Texas at Austin, where she received a M.A. in December 2004.

Permanent Address: 3463B Lake Austin Blvd

Austin, Texas 78703

This dissertation was typeset with LaTeX 2_ε[1] by the author.

[1] LaTeX 2_ε is an extension of LaTeX. LaTeX is a collection of macros for TeX. TeX is a trademark of the American Mathematical Society. The macros used in formatting this dissertation were written by Dinesh Das, Department of Computer Sciences, The University of Texas at Austin, and extended by Bert Kay, James A. Bednar, and Ayman El-Khashab.